

Stone company beats traffic problem  
by taking to the water page 154

# Rock Products

AUGUST 1957

THE INDUSTRY'S RECOGNIZED AUTHORITY



**Annual  
Cement  
Issue**

## The ideal story

An exacting, comprehensive  
look at Ideal Cement Company.  
Story starts on page 101

# DENVER QUARRY PIT PLANT EQUIPMENT

## BALL-ROD MILLS



### Distinctive Features

Electric cast and annealed steel heads reinforced with heavy ribs give greater strength than the usual cast iron. Trunnions are machined to true with axis of mill. Over size trunnion bearings are lined with high grade babbit and sealed to give lowest possible bearing pressure, with less wear and longer service. Liners for heads and shell available in the variety of long wearing alloys. Trunnions can be furnished with small (standard), medium or large diameter openings. Greater capacity because diameter is measured inside new liners compared to other mills where diameter is inside shell. Discharge types are available: end peripheral, center discharge peripheral overflow, perforated overflow, return spiral and grate.

Size Ft. Dia. x L.	Capacity Tons/Hr.	Ave. Motor HP	DIMENSIONS			Approx. Ship. Wt. Lbs.
			L	W	H	
4'x5'	1.28-2.62	30	14'-10"	8'-0"	6'-7"	18,450
4'x6'	1.54-3.08	40	15'-10"	8'-3"	6'-7"	20,500
4'x10'	2.58-4.84	50	19'-10"	8'-3"	6'-7"	28,200
5'x6'	2.78-5.42	60	17'-0"	10'-2"	7'-9"	31,200
5'x8'	3.75-7.08	73	19'-0"	10'-2"	7'-9"	36,000
5'x10'	5.42-8.75	100	21'-0"	10'-2"	7'-9"	42,000
5'x12'	5.65-10.1	125	23'-0"	10'-2"	7'-9"	47,800
6'x6'	5.15-10.8	125	18'-2"	12'-8"	10'-4"	49,300
6'x8'	6.38-13.6	150	20'-2"	12'-8"	10'-4"	56,300
6'x10'	7.70-16.2	175	22'-2"	12'-8"	10'-4"	62,300
6'x12'	8.95-19.4	200	24'-2"	12'-8"	10'-4"	69,500
7'x12'	14.6-40.0	350	26'-5 1/4"	13'-10 1/4"	11'-4"	96,500
7'x14'	16.2-44.8	400	28'-5 1/4"	13'-10 1/4"	11'-4"	103,000
8'x6'	12.4-33.4	250	22'-5 1/4"	15'-2 1/4"	12'-4"	95,000
8'x10'	19.0-32.3	350	26'-5 1/4"	15'-2 1/4"	12'-4"	125,000
8'x14'	24.2-67.0	450	30'-5 1/4"	15'-2 1/4"	12'-4"	145,000

## JAW CRUSHERS

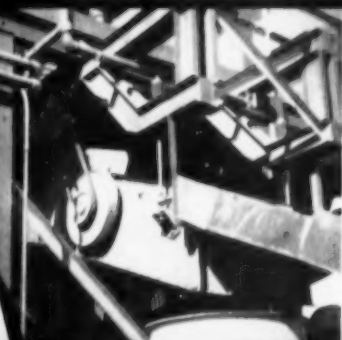


### Distinctive Features

A forced feed crusher with anti-friction pitman and side bearings. Cast steel frame on 10"x20" and smaller, welded steel frame on larger sizes. Jaw plates can be inverted for longer wear. Highest capacity is assured by extra long jaws with greater crushing area and by forced feed operation. Uniform product size range is maintained by the jaw opening, which can be easily set for the size desired.

Crusher Size	H.P. Motor	RPM Motor	Dimensions (In.)			Approx. Ship. Wt. Lbs.
			L	W	H	
5x6	5	325-375	28	27	23	900
8x10	10	230-325	43	42	39	2,600
10x16	30	230-300	56	61	44	5,600
10x20	30	225-275	55	66	50	7,000
15x24	50	225-275	59	72 1/2	71	13,000
18x24	50	225-275	59	72 1/2	71	13,000
15x36	60	200-250	60	89 1/8	75	19,200
18x36	60	200-250	60	89 1/8	75	19,200
21x36	75	200-225	66	89 1/8	86 1/2	23,450
25x40	100	200-225	82	94 1/2	102	35,000
32x40	100	200-225	84	96 1/2	113 1/2	45,000
36x48	200	200-225	115	114 1/2	134	92,000

## DENVER-DILLON SCREENS



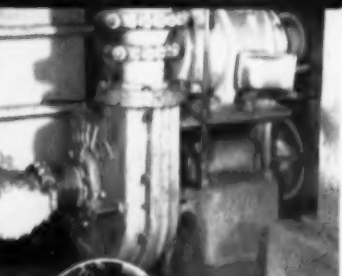
### Distinctive Features

Operate on a special, patented two bearing system. Flywheel weights counter balance the eccentric shaft, giving a "true circle" motion to the screen. Spring suspensions carry the weight. Bearings support only weight of shaft. This leaves the screen free to "float" and follow the positive screening motion without power consuming friction losses. The horsepower savings (up to 50% over 4-bearing screen) of these screens is a big item.

Screen Size W x L	With Overhead Suspension Frame			Approx. Ship. Wt. Lbs.*	Motor HP
	Width	Length	Height		
1'x3'	3'-2 1/4"	2'-1 1/4"	3'-8"	340	1 1/2
1'x4'	4'-1 1/4"	2'-1 1/4"	4'-0 5/8"	400	3/4
1 1/2'x3'	3'-2 1/4"	2'-7 1/4"	3'-8"	395	3/4
1 1/2'x4'	4'-1 1/4"	2'-7 1/4"	4'-0 5/8"	480	3/4
1 1/2'x6'	5'-1 1/4"	2'-7 1/4"	4'-0 5/8"	600	1
2'x4'	4'-2 1/4"	3'-4"	4'-10 3/8"	580	1
2'x6'	6'-0 1/4"	3'-4"	5'-11 3/8"	1500	2
3'x6'	6'-0 1/4"	4'-4"	5'-11 3/8"	1650	3
3'x8'	7'-11 1/4"	4'-4"	6'-9 5/8"	2100	3
3'x10'	9'-9 1/4"	4'-4"	7'-7 3/8"	2520	3
4'x8'	8'-0"	5'-5 1/8"	7'-10 3/8"	2320	5
4'-10"	9'-10 1/4"	5'-5 1/8"	8'-7 3/8"	2860	5
4'x12'	11'-8 1/4"	5'-5 1/8"	9'-4 3/8"	4100	5
5'x10'	9'-10 1/4"	6'-5 1/8"	8'-7 3/8"	4400	7 1/2
5'x12'	11'-8 1/4"	6'-5 1/8"	9'-4 3/8"	4750	7 1/2
5'x14'	13'-6 3/8"	6'-5 1/8"	10'-17 3/8"	5480	7 1/2

\*With suspension framework only.

## SRL SAND PUMP



### Distinctive Features

Specially bonded molded rubber on steel parts give the Denver SRL Sand Pump greater efficiency in handling abrasive pulps, and increases parts life, as much as 15 times longer than that of hard iron parts. Pump design and hydraulic efficiency produce up to 40% decreased horse power consumption compared to equivalent all metal pump. Available with mechanical shaft seals or with sealing water. Pumps and parts in stock. Denver SRL's as vertical sump pumps are also available.

Pump Size and Type	CAPACITY 20' Head		Water AV. GPM	DIMENSIONS (In.)			Motor HP	Approx. Ship. Wt. Lbs.
	RPM	HP		L	W	H		
2'x2"	838	0.6	50	25 1/2	17 1/2	26 3/8	1-10	575
3'x3"	760	1.1	100	31 1/4	19 1/4	31 1/2	1 1/2-25	830
3'x5"	590	2.4	300	37 3/4	26 1/4	36 1/2	2-30	1550
6'x6"	.....	.....	.....	43 1/4	28 1/2	46 1/2	5-100	2300
3'x3"-C	870	1.5	130	37 1/2	21 1/2	33 3/4	1-20	1240
5'x4"-C	655	2.9	350	40 1/4	27	37 3/4	2-40	1600
8'x6"-C	300	5.7	800	63	36 1/2	49 1/4	5-100	4375
10'x8"-C	485	14.0	2000	68 3/4	43	57	10-125	5100

\*Based on water. Multiply listed horsepower by specific gravity of pulp to obtain actual brake horsepower.



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**DENVER EQUIPMENT CO., 1400 17th St., Denver 17, Colorado**



## B.F. Goodrich report:



Photo courtesy Basic Construction Materials Division, Chittenden, Ohio

## Rocks used to slide down faster than they went up

### *B. F. Goodrich improvements in rubber brought extra savings*

**Problem:** Getting tons of sopping wet rock and gravel up that steep incline was causing plenty of trouble at this plant. When a regular conveyor belt was used, the wet gravel often washed down faster than the moving belt could carry it up.

**What was done:** Then a B. F. Goodrich man told the company about a special kind of belt, developed by B. F. Goodrich, to handle wet materials. This "Riffle Grip" belt, as it is called, is made with a series of extra-tough rubber ridges molded into the cover. The tread that these ridges form holds the

gravel in place, and at the same time, channels the water to the edges of the belt where it falls off.

**Savings:** This B. F. Goodrich belt was tried, and it works perfectly. The gravel flows smoothly uphill. More tons are handled with no slipping, no sliding, no problems of any kind.

**Extra benefits:** Another important feature is that just by using different angles of incline and troughing idlers, this same belt can carry such sloppy materials as wet mixed concrete and keep the water from draining away.

**Where to buy:** Your B. F. Goodrich

distributor has exact specifications for the B. F. Goodrich conveyor belt described here. And, as a factory-trained specialist in rubber products, he can answer your questions about *all* the rubber products B. F. Goodrich makes for industry. B. F. Goodrich Industrial Products Co., Dept. M 113, Akron 18, O.

**B.F. Goodrich**

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Enter 1030 on Reader Card

ROCK PRODUCTS, August, 1957



## FEATURES

- The ideal story** 101  
*A large portion of this issue is devoted to an exacting look at an organization that has been an outstanding example of youthful thinking in the cement industry—Ideal Cement Co. In the following seven articles we have tried to give a thorough examination of each phase of Ideal's operation in the hope that it will provide you with helpful enlightened information to guide you in your own planning*
- Raw materials procurement** 107  
*Since Ideal's advance planning relies upon availability of raw materials, reserves are mapped out 50 years ahead*
- Ideal's manufacturing operation** 113  
*Management places major emphasis on men in maintaining their complex and widely dispersed properties*
- Maintenance program increases production** 119  
*Ideal's maintenance set up cuts repairs to a minimum and, at the same time, it considerably increases production*
- Research plays an integral part** 129  
*Both business and technical problems are handled by this particular phase of Ideal's operation*
- Ideal's industrial relations policy** 133  
*Safety, labor relations, personnel and communications—all are handled by this department*
- Sales force works under broad but rigid standards** 143  
*Variety of company functions are handled by the sales department: advertising, public relations, transportation*
- Reaching into the future . . .** 152  
*The conclusion of the Ideal story can end on only one note: that, for Ideal, this is just the beginning*
- Crushed stone company takes to the water . . .** ● E. Meschter 154  
*As mainland traffic problems mounted, Graham Bros. developed a quarry on Catalina Island—now ship stone by barge*
- Four men, army of conveyors mine gravel deposit** 166  
*Ross Sand and Gravel Co. mines a 75 million ton deposit using only four men and an army of conveyors*
- Jamaican cement company expands again!** ● T. W. Hill 172  
*While already in the process of expanding, Jamaican firm decides to expand once more to accommodate demands*
- YOU can build better employee relations** ● J. E. Bedford 181  
*This illuminating article tells you how to improve employee relations merely by carefully selecting the words you use*
- Safety and the hourly employee** ● C. A. Gustafson 183  
*The part this worker plays is important in any safety program. Here's how you—and he—can work together to promote safety*
- NLA members told of bright future** 202

## DEPARTMENTS

What's Happening	9	Industry News	61
Editor's Page	15	Calendar	94
Rocky's Notes	19	Hints and Helps	96
Washington Letter	23	Recent Patents	222
Labor Relations	28	New Machinery	232
People in The News	37	Manufacturers News	245

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# "TREMENDOUS load carrying ability!"

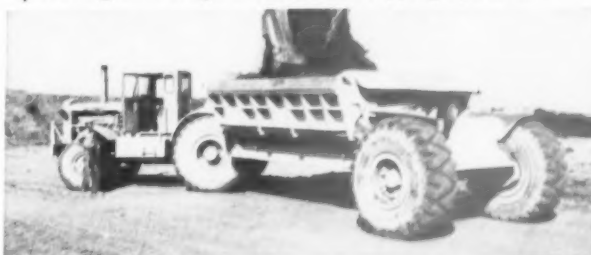
says N. D. ARMENTROUT, Quarry Superintendent, Dewey Portland Cement Co., Davenport, Iowa



↓ loading with six-yard shovel in quarry shuttle service



↓ loading with dragline bucket in stripping operation



↓ driver has safe view of dumping over bank in fill area



"Three units work sixteen hours a day.  
*Eight hours hauling rock in the quarry.  
Eight hours stripping overburden. All  
we do is change drivers.*

"Tremendous load carrying ability in  
quarry hauling and in stripping. Have  
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Average payload 30-34 tons.

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One full eight-hour shift eliminated."

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*gooseneck trailer • fully automatic drop door*

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Easton off-highway trailers and truck bodies are sold through truck and tractor manufacturers and their contract dealers.



LOCATION: Route 40, Martins Mountain, Cumberland, Md.

OPERATING CONDITIONS: Medium limestone.

## The Bero Construction Corp. and the Via Company Inc. relocate Md. Route 40, cut drilling costs with TIMKEN® carbide insert bits

**I**N relocating 2.4 miles of Route 40 at Martins Mountain east of Cumberland, Md., Via Company Inc. had to drill through limestone. To get maximum production, keep bit cost per foot-of-hole at a minimum, they used Timken® carbide insert bits.

For hard, abrasive ground, Timken carbide insert bits give you greatest economies. They permit faster drilling with fewer bit changes.

But carbide insert bits may not do the most economical job in every case. In ordinary, less abrasive ground, Timken multi-use bits save the most. When correctly controlled and reconditioned, Timken multi-use bits lower your cost per foot-of-hole when full increments of steel can be drilled out.

Both types of Timken bits save drilling time because they are interchangeable in the same thread series. They let you switch bits on the same drill steel as the ground changes, right on the job. And the special shoulder union of Timken bits protects against drilling impact, adds to bit life.

Timken rock bits are made from our own electric furnace fine alloy steel. We're the only American rock

bit manufacturer that makes its own steel. Let our experts help you select the best bit type for your particular drilling job. Write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".



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WHEN WE  
SAY...**



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This big, Model 6, 1½ cu. yd. Northwest is in the pits of the Wissota Sand & Gravel Co. of Eau Claire, Wisconsin. This is the third Northwest this company has purchased — a repeat order that beyond all question endorses Northwest performance and output.

Northwests are built for the toughest job a shovel has to do. They mean high output in any class of digging. Get the full story on Northwest advantages and remember, one out of every three Northwests sold is a repeat order.

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# **NORTHWEST**

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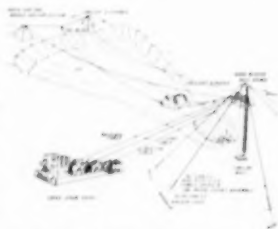
Digging and hauling are reduced to one continuous operation by using either a Sauerman DragScraper or Slackline Cableway. By combining the two basic steps of material flow, equipment and labor costs are halved—or even more. A single machine, controlled by one man, does the same job as the multiple equipment required by other methods.

Profitable handling is further assured by a low maintenance cost of 1½ cents per cu. yd. for an average size installation. Larger machines drop this cost still lower. Important, too, is the money saved on power. You pay only the cost of moving the actual digging tool—the Crescent DragScraper or Slackline bucket. Heavy machines with limited handling-to-dead weight capacity are eliminated.

## General Handling, Wet or Dry— Pit or Hill Excavation and Reclamation



3-yd. DragScraper digs and hauls sand and gravel from pit to plant hopper over a distance of 400 ft.



A DragScraper is recommended for these and similar jobs. This machine handles the toughest digging and operates on a hillside or underwater with as much facility as dry level ground. It hauls directly to hopper, crusher or storage pile.

Operation is simple and safe. An inexperienced man can be quickly trained to do the job. Control station and hoist are remotely located from any hazardous area.

Sauerman DragScrapers range in size from ⅓ to 15 yds. They can be worked over spans of 1000 ft.



Crescent approaches hopper in front of tubular mast. Inset shows operator at hoist controls.



## Deep Digging, Underwater Recovery— Conveying to High Delivery Point



This 1½-yd. Slackline Cableway is digging in 70 ft. of water and conveying to stockpile on an average haul of 600 ft.

When deep digging is required—or anticipated in the future—a Sauerman Slackline Cableway is the best machine. This powerful excavator can dig 100 ft. or more below water, lift its load and deliver to a high pile up to 1000 ft. away. This surge pile can be held in readiness for plant needs.

The bucket inhales at high speed and dumps automatically. The dumping point is determined by a stop button on the track cable. Gravity returns the bucket to the digging point completing the fast operating cycle.

Sauerman Slackline Cableways range in size from ⅓ to 3½ cu. yds. Now available with torque convertor power, the Slackline is increasing its production over 25%.



Bucket automatically discharges onto a 60-ft. high cone pile. Mast in foreground rises 90 ft.

The best Sauerman Machine for your plant is governed by the nature of the deposit, location of material, the depth and plant layout. Why not consult Sauerman engineers about your plant? Their recommendations will be based on almost fifty years of sand and gravel excavating machinery experience. Ask for Catalog A (DragScrapers) and C (Slackline Cableways).

# SAUERMAN

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BALL MILL



ROTARY PUMP



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SECONDARY LABORATORY CRUSHER

ROCK PRODUCTS, August, 1957

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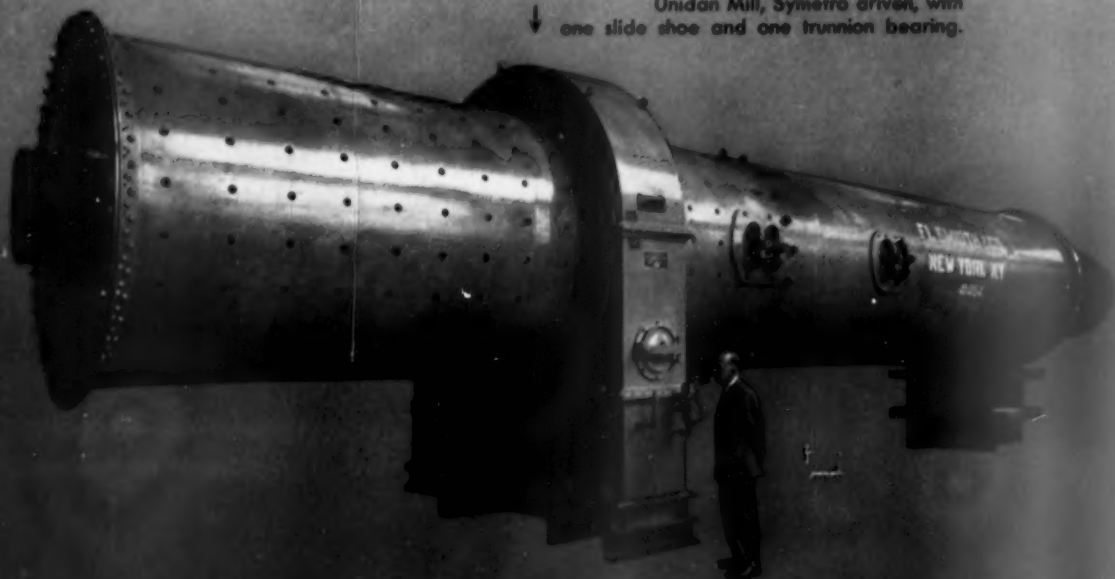


# SMIDTH

## Grinding Mills

Ball Mills and multi-compartment Unidan Mills for wet and dry, open and closed circuit grinding and airswept Tirax Mills for simultaneous drying and grinding. Auxiliary equipment for mills. Special features include the Smidth slide shoe bearing and the Symetro Drive.

↓ Unidan Mill, Symetro driven, with one slide shoe and one trunnion bearing.



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# What's Happening

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IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

August, 1957

**Continuing to rise** are outlays for new construction work put in place. A record of \$4 billion for such spending was set during May, up 11 percent from April and two percent from May, 1956. During the first five months of this year, expenditures totaled \$17.1 billion, up three percent from the same period in 1956, according to the U. S. Departments of Commerce and Labor. Private spending accounted for \$2.8 billion of the May \$4 billion total, and public spending, for \$1.2 billion. There is a lag of one percent in the private spending total from that established in May, 1956, but offsetting this was the gain of nine percent in public spending in the same period.

**Pipeline shipment of materials** began recently over American Gilsonite Co.'s 72-mile line which transports a slurry of the crushed hydrocarbon from its mines at Bonanza, Utah, to a new refinery at Grand Junction, Colo. And in another region a similar pipeline is being tested. This is the 108-mile line through which a coal slurry has passed from the Pittsburgh Consolidation Coal Co. mines near Cadiz, Ohio to the Eastlake, Ohio, plant of Cleveland Electric Illuminating Co. A previous attempt in February to use the line failed when material being transported jammed up near the first of two booster pumping stations.

**The frozen North** is the scene of a housing experiment as Eskimos try out a plastic foam igloo. The idea came to an official of Canada's Department of Northern Affairs when he saw a Christmas display in a department store. The plastic foam block igloo was set up on Baffin Island and reportedly has the advantage of remaining dry when warmed and being easier to keep clean than snow. Whether or not the Eskimos like it has not been reported.

**Undergoing tests by the Army** at Fort Belvoir, Va., is a robot bulldozer, made by LeTourneau-Westinghouse Co. A standard tractor is equipped with a military radio receiving set to operate the controls. It can be operated from as far away as 15 miles. Fighting fires in large fuel storage tanks is suggested as one of its possible uses.

**New silicone dyes** developed at Union Carbide and Carbon Corp. have been described as suitable for dark and permanent coloring of glass cloth. Formerly the cloth had to be coated with a substance which could take a color. The new dyes have other uses in modifying properties of conventional types of silicone oils and resins.

**Eastman Kodak Co. and G. & W. H. Corson, Inc.,** the latter prominent in the rock and concrete industries, have revealed the results of their efforts to produce batteries that can remain in inert storage for years until brought to full power in one-tenth second by an internal burst of ammonia gas. The new battery is activated by ammonia vapor released under pressure. Trial models are expected to be available to industry early in 1958.

**The technique of making sand molds** for castings, using waterglass as a bonding agent, has been developed by Army scientists at the Watertown, Mass., arsenal. The process, called "resinless shell moldings," reportedly may effect a savings of 90 percent in cost of the molds. Paul J. Ahearn of the arsenal's Rodman laboratory is credited with originating the process.

**Pointing out the connection** between the atom bomb and aglime, Robert M. Koch, president and general manager of National Lime Association, suggests that a sound liming program be pursued to protect the population against overexposure to strontium-90, traced in radioactive fallout. The Atomic Energy Commission, said Mr. Koch, has determined that plants in soils which have adequate amounts of calcium will take up only 25 percent of strontium-90 that plants on soils short of calcium will absorb.

**Gradual sinking of the harbor area**, at the rate of a foot and a half a year, is a problem being pondered by Long Beach, Calif., residents. The subsidence is caused by compaction of sand following pumping out of oil, gas and salt water. A study by Richfield Oil Corp. has led its vice-president, W. J. Travers, to advocate repressuring. This would involve returning produced gas underground along with the salt water, enough to offset current production and to restore pressures reduced by past production. When pressure is restored, he said, the gas could be removed and water injection alone would maintain pressure and halt sinking.

**Importance to industry of rock research** conducted by scientists of Illinois State Geological Survey has been indicated by Dr. John C. Frye, chief of the survey. X-ray diffraction for identification of minute rock particles, valuable in evaluating oil prospects, also is being used to study arrangement of atoms in calcite and dolomite in order to learn more about their physical and chemical properties. A division led by Dr. Glenn Finger is developing new uses for fluorspar in the field of fluorine chemistry. A process for production of aromatic fluorine compounds can be applied to existing industrial operations, Dr. Frye said. A host of new chemicals are being made available which will pave the way for new insecticides, fungicides, soil and plant chemicals, medicinals, disinfectants, plastics and other products.

**A refractory cement**, said to be dielectric and highly shock-resistant, has been developed by Charles Engelhard Inc. Called "CA-9," the material bonds metal to metal, glass or ceramics despite temperatures between -420 and 1,000 deg. F. Remaining slightly malleable after drying, it is said not to crack, craze or check, and to be waterproof and nonhygroscopic.

**Use of ceramic fuels** to fire an atomic reactor was reported to the American Ceramic Society meeting in Dallas by scientists from Argonne National Laboratory, Chicago. The laboratory is experimenting with ceramic pellets canned in metal to produce heat for electricity from a nuclear reactor near Idaho Falls, Idaho. The pellets, urania and thoria, are ceramic oxides of uranium and thorium. Their metal jackets provide added physical strength, hold in the fission products and protect the fuel element from the reactor's coolant stream.

THE EDITORS



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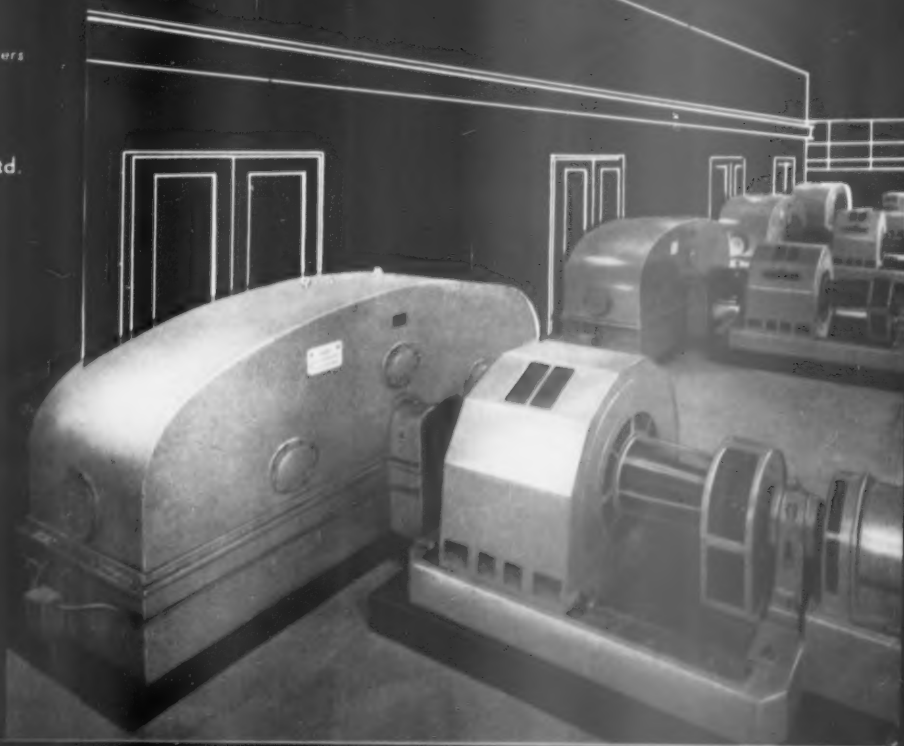
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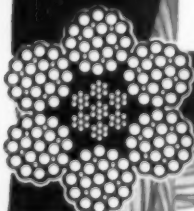
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LOOK FOR THE YELLOW TRIANGLE



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## EDITOR'S PAGE

### A Modern Approach To Progress

**T**HE RACE TOWARD IMPROVING techniques and know-how in industrial production during the past decade or two has opened the door to a host of business problems. It has caused management to take a new look at its business philosophy, because it has to run to stand still in these hectic times. By comparison, important decisions must be made in minutes today, whereas they could take hours, or days, 10 years ago.

Progress is not a tangible object that is subject to human senses for definition, when viewed from one place at one time. Progress, or lack of it, can be determined only by comparison. And it has stamped since 1945!

Take a look at an example or two given by J. Lewis Powell, Office of the Assistant Secretary of Defense, at the recent National Lime Association meeting in Colorado:

Plot the speed at which man has traveled. For more than 30 centuries—to 1830—the curve ran dead level at the rate a horse could run. By 1910, the first military airplane was guaranteed to go 42 miles per hour—maybe 10 mph. faster than the horse. A third of a century and two wars later, speed had been pushed up to 470 mph. Then what happened? In only 10 years, the rate jumped to 1,500 mph. That is progress—technological progress!

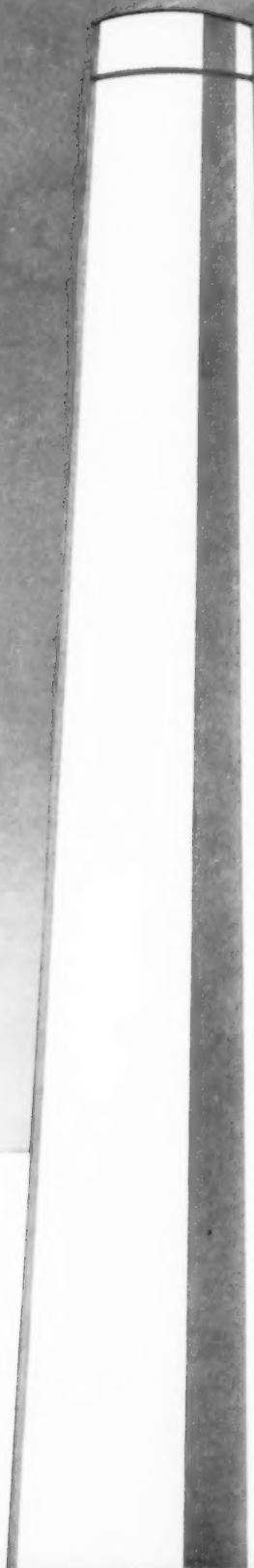
How about explosives? The picture's the same. We've had to invent some new names—such as megaton—to keep up with the explosive forces that atomic fission brought in only 10 short years. Medicines? Foods? It's hard to keep up with new developments, they come so fast.

And so it has been, or soon will be, with most of our major industries. This unprecedented progress in such a short time has burdened management, caused it to find new ways to keep up with the whirl in technological progress. Business heads have had to reassess their position, then plan for full steam ahead—and yet be practical about it.

That's why ROCK PRODUCTS, in this issue, has taken a new approach in describing the Ideal Cement Company. The series of stories on Ideal is devoted to discussion of its operations—but with a special accent on management philosophy. Company stewards realized some time ago, when business began to grow, that it takes more than technological advancement to make company progress. They now look at the future with a different eye, and plan for it at least 10 years ahead.

It is our sincere hope that this story of one company's growth, and management's attitude toward planning for it, will be not only of interest but of help to all in the cement and allied industries.

*George C. Lindsay*





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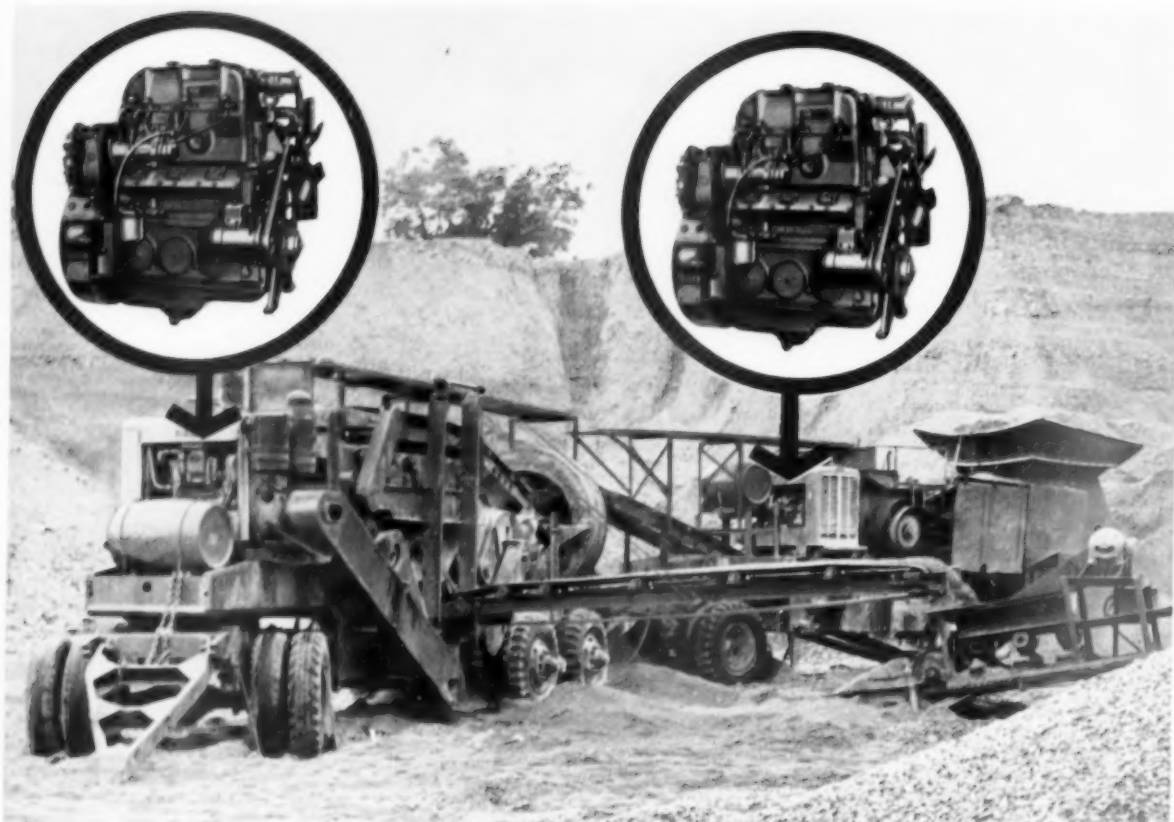
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Check these profitable performance features of the P&H Diesel

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- Faster Starting    • Higher Torque
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... This is the enthusiastic report of Mr. Gene Miller, owner of the McHenry Sand and Gravel Company, McHenry, Illinois.

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## "Chemistry of Cement and Concrete"

**U**NDER THE ABOVE TITLE we have for review a new and revised edition of probably the best known textbook\* on the subject in the English language. The original authors are F. M. Lea and C. H. Desch, and the original issue was in 1935. Both men are or have been associated with the British portland cement industry practically all their professional lives. The revision and rewriting was done by Dr. Lea. The preface to the new edition does not mention his former co-author, and it is presumed he is deceased. The plan of the book remains unchanged, but of course much new knowledge has been acquired since 1935.

It is our intention to review the new edition in two or more installments. First, in this issue of ROCK PRODUCTS, we will compare briefly the new text with the old, for there are many copies of the original text still in every-day use by cement plant chemists and operating men. They should know where the important revisions and additions have been made. Second, we shall discuss later in some detail how the author has interpreted the new knowledge acquired since 1935. In this we are interested because during those intervening years we have tried to keep our readers abreast of this new knowledge, and often (perhaps too often) we have given our own unorthodox interpretations, not as an expert, but from an interested layman's point of view.

To begin, both editions are in the same type face, and, like all British printing, excellently well done. Even the bindings are similar. The new edition contains 637 pages, the old 429, so we know at least one-third of the text is new.

The chapter on the history of calcareous cements shows evidence of some revision, but is essentially the same. A new reference work has been

added: R. W. Lesley "History of the Portland Cement Industry in the U.S.A."

Chapter II on classification of cements includes the new varieties of portland cement developed in the United States: Low Heat; Sulphate Resisting; and German developments, Kuhl; Iron Ore; the Italian Ferrari and the new French, Expanding or Non-Shrinking. Under Air-Entraining Cements is the most complete list we have yet seen of air-entraining agents usually employed—not by their trade names, but by their composition in terms the layman can understand.

Chapter III on raw materials and processes of manufacture has been considerably revised especially to show improvements in heat or fuel economy. Mention is made of devices for heat exchange which have come into use since the first edition was published. Perhaps the most interesting reference is to a type of operation not yet introduced in the U.S.A., although we understand one is contemplated. This is the process operated in England, France, Germany and some eastern European countries of combining the manufacture of portland cement and sulphuric acid by burning anhydrite or gypsum in rotary kilns with clay, coke, sand and iron oxide. The reason the process has not been used in the U.S.A., we believe, is because we have, at present anyway, ample resources of native sulphur.

Chapter IV on cement components and their phase relationships gives evidence that a very painstaking job has been done, probably typical of that in the entire book. For example, referring to magnesium oxide (MgO) it was stated in the 1935 edition: "Magnesia does not form solid solutions with lime, the two compounds crystallizing independently from their fused mixtures." The new edition states: "Magnesia is only slightly soluble in lime at high temperatures and lime is even less soluble in magnesia. These solid solutions decompose at lower temperatures and for all practical purposes it may be assumed that the compounds

Please turn to page 215

\* "The Chemistry of Cement and Concrete" by F. M. Lea and C. H. Desch, St. Martins Press, Inc., 101 Park Ave., New York 17, N.Y., Oct., 1956.

## KOEHRING WORK CAPACITY in action...



**Swings a big bucket** — Notice the size of this dragline, stripping a coal seam in an Eastern mine (below). It's the big Koehring 1205 — and handles 3 to 4-yard bucket, depending on weight of materials. Boom lengths: 60 to 170 feet. This big-capacity stripper also converts to 3-yard shovel. High-lift model has a 3-yard dipper on 40-foot shovel boom — or a 2½-yard dipper on 50-foot shovel boom.



**21.5 mph Cruiser** — One man controls all operations, one engine supplies all power for work and travel on Koehring 205 Cruiser crane. There's a full range of low working speeds up to 7 mph — plus travel speeds up to 21.5 mph. It has smooth torque-converter drive, power steering, 27½-foot turn radius, 30% gradability. Usefulness is unlimited in mines, pits, and quarries. 205 Cruiser lifts up to 15 tons — handles ½ to ¾-yard clamshell or dragline buckets on a wide work radius — converts to ½-yard shovel or hoe.



**Ship to shore** — A pair of Koehring 405 clamshell cranes, mounted on a Great Lakes dredge — one of the world's largest — solved the problem of transferring sand from the ship's hold to shore. With this system, approximately 4,500 tons of sand are unloaded in 6 hours. Crane in foreground dumps into a Johnson Lo-Bin, mounted on flanged wheels. Lo-Bin travels along track, transports sand to a swinging, boom-type conveyor, which stockpiles it at dockside. On clamshell work, Koehring 405 handles 1 to 1½-yd. buckets. Check its other capacities in chart on opposite page.

**KOEHRING** DIVISION OF KOEHRING COMPANY, Milwaukee 16, Wis.





Here are some figures that will interest you:

KOEHRING MODEL	SIZE DIPPER	LIFT CAPACITIES	
		(Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load.)	
205 CRAWLER	½-Yd.	20,000 lbs.	at 10-ft. radius
205 ON RUBBER	½-Yd.	30,000 lbs. 14,600 lbs.	at 12-ft. radius at 20-ft. radius
305 CRAWLER	¾-Yd.	30,000 lbs.	at 12-ft. radius
305 ON RUBBER	¾-Yd.	50,000 lbs. 15,800 lbs.	at 10-ft. radius at 30-ft. radius
405 CRAWLER	1-Yd.	40,000 lbs.	at 12-ft. radius
445 ON RUBBER	(Crane only)	90,000 lbs. 40,000 lbs.	at 15 ft. radius at 25 ft. radius
605 CRAWLER	1½-Yds.	72,300 lbs.	at 12-ft. radius
805 CRAWLER	2-Yds.	104,200 lbs.	at 12-ft. radius
1205 CRAWLER	3-Yds.	190,000 lbs.	at 12-ft. radius



Want more information?

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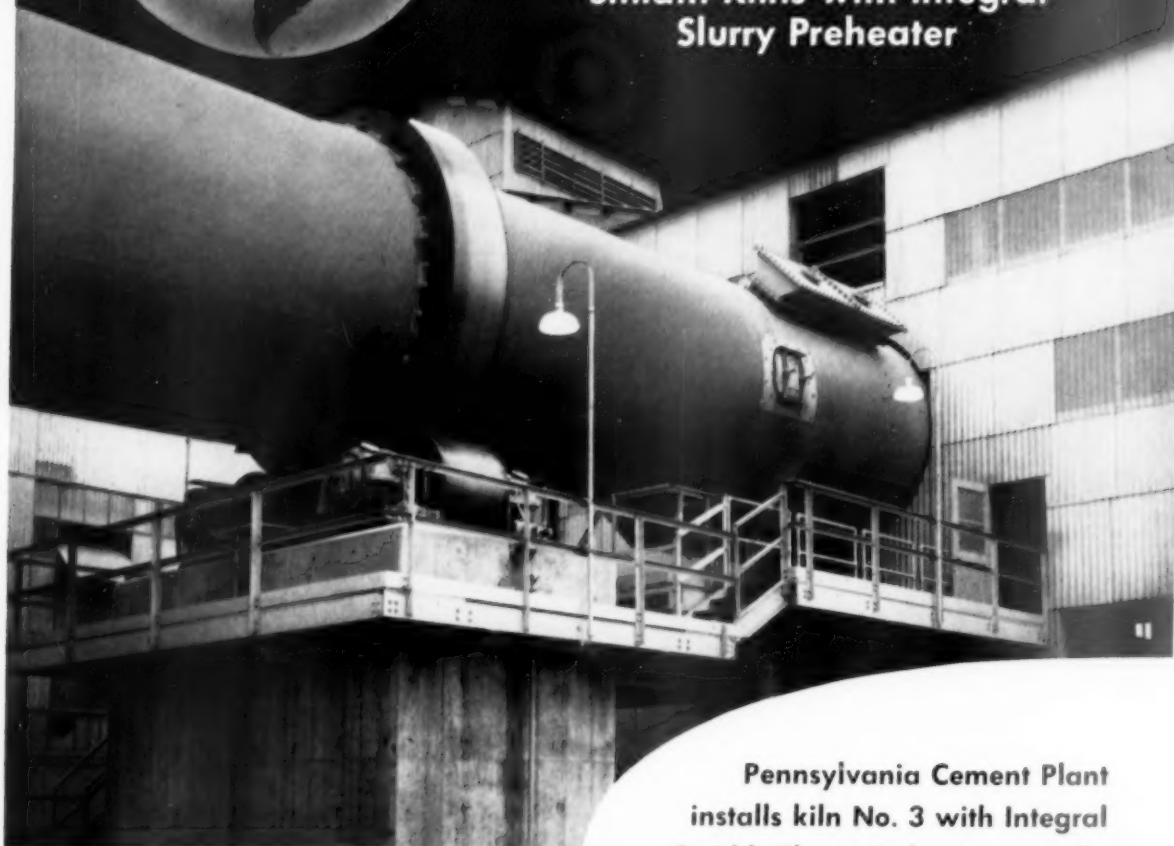
**In heavy rock** — Owner of this Southern mine needed a heavy-duty shovel to strip rocky overburden — picked a Koehring ¾-yard 305 for the job. Its powerful digging crowd, and rugged strength of deep-section boom and dual dipper sticks, proved more than a match for the heavy rock. Yet, in work like this, 90% power-assist on main drum clutches gives operator a light lever-pull and sensitive "feel" of load. Power, strength, stability as a shovel increase the 305's work capacity with all attachments. For proof, check its lift ratings (at left).

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# Washington Letter

Edgar Poe

## Minerals Policy

President Eisenhower's Cabinet committee on minerals policy has submitted to Congress an important long-range program for development of domestic mineral resources after two years of intensive research and planning.

The program is designed to supply the general needs of an expanding peacetime economy as well as the longer term demands of national defense. Secretary of Interior Fred A. Seaton, as spokesman for the Cabinet committee, declared that his department proposes to expedite exploration.

The Bureau of Mines will direct the scientific study, which will include the development of improved mining and processing methods in order that lower grade reserves may be brought into commercial production.

The Cabinet report said that gypsum, one of the major mineral products used in building construction in the United States, has had a tremendous growth. Production since 1948 has risen from 7,255,000 short tons to nearly 11,000,000 short tons. Over the same period, industrial consumption has increased by approximately 50 percent.

"It is anticipated," said the Cabinet report to Congress, "that with continued expansion of industrial activities in the United States, gypsum and gypsum products will continue to have a ready market. The present health and vigor of this industry make unnecessary the provision of any special governmental program beyond research conducted by the Bureau of Mines on the problem of hydration of gypsum plaster."

Referring to fluorspar, Secretary Seaton told the Senate Interior and Insular Affairs committee that the program for acid-grade fluorspar received administration support because it provided a remedy for the problem posed by the temporary surplus of the material then on the market as a result of completion of government stockpiling contracts.

"The Public Law 733 program, if continued as we have urged," said Secretary Seaton, "will enable the industry to ride out the period of temporary surpluses and provide time for consumption to catch up with supply and for the industry to orient its operations to normal commercial markets. At the conclusion of the program we shall review the situation with respect to this commodity. Industry requirements are expanding rapidly, and new uses should create new markets."

Government buying of fluorspar (metallurgical grade) for the defense stockpile is providing a floor under the domestic price, said the Cabinet officer. He added that with the continuance of the stockpile purchase program for a while longer, the industry will be reoriented at reasonable price and production levels.

Domestic production of phosphate rock is currently some 13,500,000 long tons a year. Production has increased about 50 percent from 1949 levels, and it is estimated there will be further increases in production as use in fertilizers increases. Growth and high-level activity in the phosphate rock field make unnecessary the provision of any special government program beyond that of the Bureau of Mines, which will conduct mining and processing investigations.

Citing the growth of domestic production of potash, Secretary Seaton said production has increased from 1,140,000 short tons in 1948 to 2,140,000 short tons in 1956. Consumption of potash is expected to increase as fertilizer use becomes more widespread. Imports are a minor factor. There is no requirement for any special government program beyond that now conducted by the Geological Survey directed toward expanding knowledge of U.S. reserves of this commodity.

"Other minerals were included in the Administration's review," said Secretary Seaton. "Their exclusion from the direct assistance program requires no detailed explanation. In one category are minerals of national significance — such as sand and gravel or clay — which have problems largely local in character."

## Interstate Highway

Some experts now estimate that for each new mile of interstate highway to be built, 60 acres of land or a total of 2,460,000 acres will be utilized and unavailable for other uses. Of this total, thousands of acres of good farm land will be lost to agriculture.

With new housing projects, airports and great industrial expansions taking place as a result of the 3,000,000 annual population increase, authorities say the time is coming when there will be a pinch for sufficient good land to produce the food and fiber needed.

The National Agricultural Limestone Institute insists that the only answer lies in better care of the soils that are left in this country. Department of Agriculture authorities maintain that in order to grow satisfactory cover crops to protect the top soils, the soil first should be treated with the minerals needed to start the crop and keep it growing.

Action by the Senate Public Works Subcommittee that would expand the 41,000-mile interstate highway system by 7,000 miles had run into some opposition, but it had also received some support.

Nevertheless, it appears highly unlikely that Congress will approve the expansion authorization at the current session which is expected to end sometime in August. The Eisenhower administration favors that the 13 to 15-year program authorized a year ago be moved further along before any additional authorization be approved.

Although he is not sure when it will start, Housing Administrator Albert Cole predicts that the great highway construction program will be a tremendous factor in the greatest home building program of all time. The administrator forecast that the stepped up housing program could start later this year.

## Sand and Gravel Survey

The fourth annual survey of the National Sand and Gravel Association shows some interesting statistics that should be of value to the industry. Returns were received from 551 companies (1,597 questionnaires were dispatched) operating 922 plants. Also available were production statistics from 53 member companies who did return the questionnaire and were incorporated into the study where possible. Total participation: 604 companies.

Average production for reporting company was 397,012 tons compared with an average of production per company of 380,631 tons reported for 1955. Average production per plant in 1956 was 245,944 tons as compared with 236,586 tons in

1955. The reporting companies produced 104,970,811 tons of sand, valued at \$105,080,012, an average value of \$1 a ton, and 134,824,523 tons of gravel, valued at \$160,145,532, an average value of \$1.19 per ton.

Trucks continued to carry an increasing amount of sand and gravel tonnage, accounting for 151,698,995 tons or 68.6 percent of the reported production as compared with 62.7 percent of the 1955 production reported. Railroads transported 44,947,044 tons or 20.3 percent of the total production, a slight decrease from the 24.4 percent shipped by rail in 1955. Water transportation accounted for 19,825,103 tons or 9 percent of the reported production.

The largest number of sand and gravel companies was in two brackets. There were 97 companies in the 50,000 to 100,000 ton division, and 155 companies with production of 100,000 to 200,000 tons. Eleven companies reported individual production of more than 3,000,000 tons of sand and gravel last year, accounting for 23.4 percent of the total production. Seventy-five percent of the companies representing the smaller three-fourths produced less than 25 percent of the total tonnage.

## Proposed Legislation

There appears to be a good chance that Congress will have reduced the 1958 fiscal year budget by some \$3 billion. This would justify a tax cut next year with every taxpayer benefiting. The last tax cut was in 1954 when there was a \$7½ billion reduction. Meantime, the tax receipts are at an all-time high.

There is marked interest in the proposed liberalized pension-plan legislation. The plan would require registration and issuing information on labor pension plans through the Department of Labor.

The pending proposals would subject all pension plans to supervision.

Efforts by the Eisenhower administration to get legislation passed which would slash taxpayer subsidies of the interest rates of government loans — it costs the government money to make loans in most instances — appears to have little chance of passage. Loans are made through numerous Federal agencies.

Area redevelopment legislation pending seems unlikely to be enacted at the current session. Approval this year by either the House or Senate seems doubtful, but the proposals will continue "live" into 1958. By terms of the proposals, the Federal Government would provide loans or grants for communities with depressed economies. Technical assistance also would be provided.



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\*Self-contained ac to dc circuit. Standard in Size 6, optional in sizes 4 and 5.

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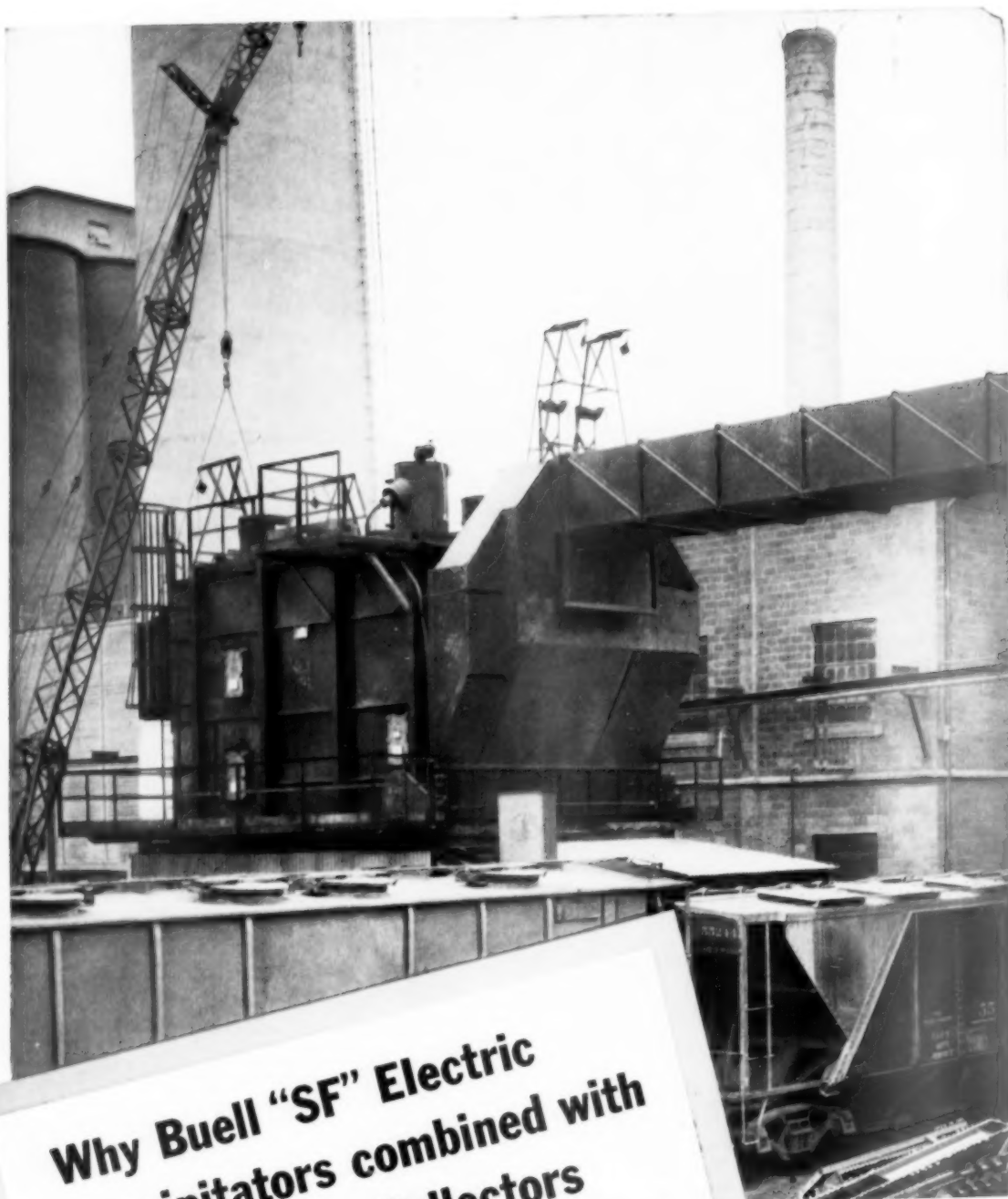
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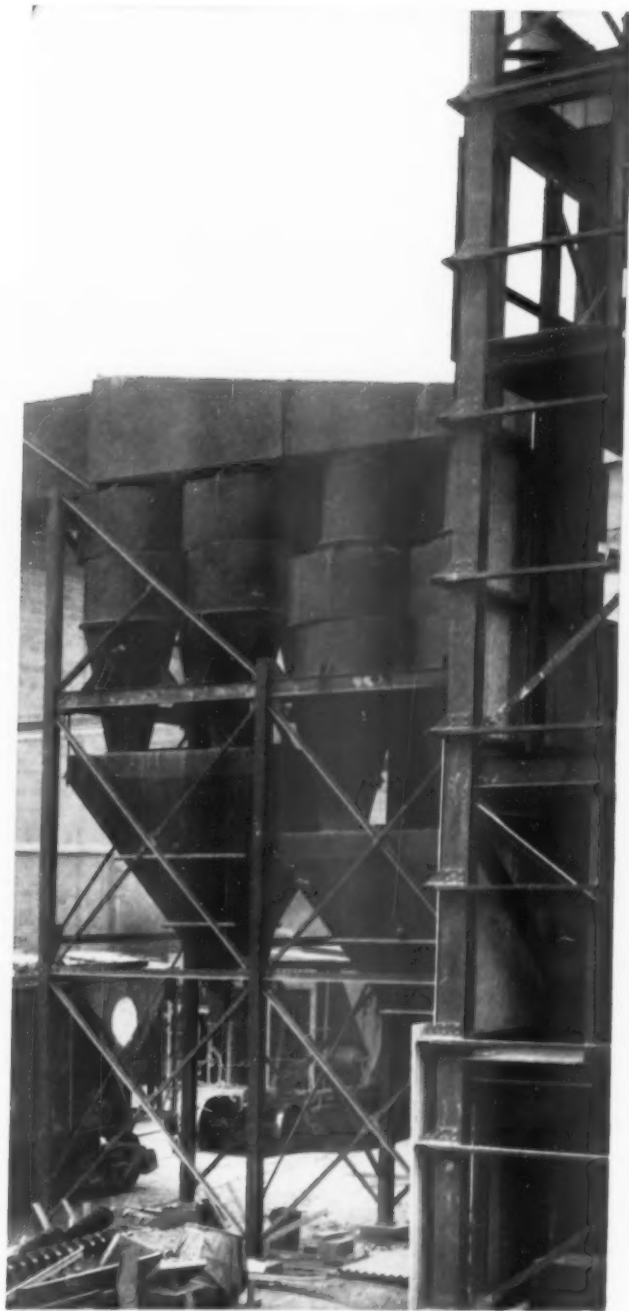
ROCK PRODUCTS, August, 1957



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assure an extra percentage  
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*Experts at delivering*



**W**hen Buell "SF" Electric Precipitators and Buell Cyclone Collectors are installed in tandem ... you have the ultimate in efficiency *under all conditions*. Because their basic principles of operation are different, they complement each other in such a manner as to provide two important advantages: (1) increased efficiency, and (2), improved stability. For example, changes in the characteristics of dust particles or gases will not appreciably affect the percentage of efficiency of the combined units.

Buell "SF" Electric Precipitators with their exclusive "Spiralelectrodes" are unequalled in the recovery of fine dust particles. Featuring continuous rapping and many other exclusive design advantages, they are your guarantee of that all-important extra percentage of efficiency—often the difference between a highly profitable recovery operation and a break-even one.

Buell Cyclone Collectors with their large diameter, clog-proof design, also offer you the kind of efficiency that results in many extra tons of recovered valuable dust. Whereas the secondary air currents in most collectors tend to lower efficiency, Buell's exclusive shave-off design utilizes them to recover more dust.

For detailed information on how Buell equipment is delivering that all-important extra percentage of efficiency in the cement and lime industry, write Dept. 17-H, Buell Engineering Company, 70 Pine Street, New York 5, New York.

*Free Booklet*

Describes all three  
Buell Systems for the recovery  
of valuable dusts.

**buell**<sup>®</sup>

*Extra Efficiency in* **DUST RECOVERY SYSTEMS**

ROCK PRODUCTS, August, 1957

Enter 1200 on Reader Card

27

# How would you decide?

A roundup of actual day-to-day in-plant problems  
and how they were handled by management men



## Must you pay workers for the time you spend communicating to them?

### What Happened:

THE COMPANY COULDN'T AFFORD TO give a pay increase and wanted the contract renewed "as is" for another year. The company called a meeting of all its workers, and the company president explained the situation to them. They agreed to go along with him on a "no raise" contract renewal. But later, they demanded time and a half for the hour the meeting ran past the regular 4 p.m. quitting time. The company said "no!" But the workers wouldn't take "NO" for an answer. The company argued:

1. The meeting was every bit as much for the worker's benefit as for the company's. Without the

Each incident given in this department is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to Rock Products.

explanation, they wouldn't have agreed to contract renewal without an increase. When there's a strike, or the company has to re-trench, everybody loses.

2. The workers were asked to come to the meeting, but nobody forced them to come. Attendance was voluntary.

The workers answered:

1. When the company president calls a meeting, brother, it ain't voluntary. You gotta go.
2. Overtime is overtime, whether it's spent at a machine or in a company meeting.

Were the workers:  
Right? ☐ Wrong? ☐

What Arbitrator M. Goldberg ruled:

"It is this arbitrator's opinion that when the company asked the workers

to be present at the meeting, it was, in effect, assigning them to attend it—as it would assign a worker to any of his production tasks. Attendance was therefore required. If this were not the intention, the company, prior to 4 p.m. might have announced that any employee could feel free to leave at that hour. This the company did not do. Accordingly, all time spent in attending the meeting shall be regarded as working time. Each employee shall be paid for one hour at the rate of time and one-half his regular hourly rate."

## Can you discipline a union official if he advises employees not to obey a new company rule?

### What Happened:

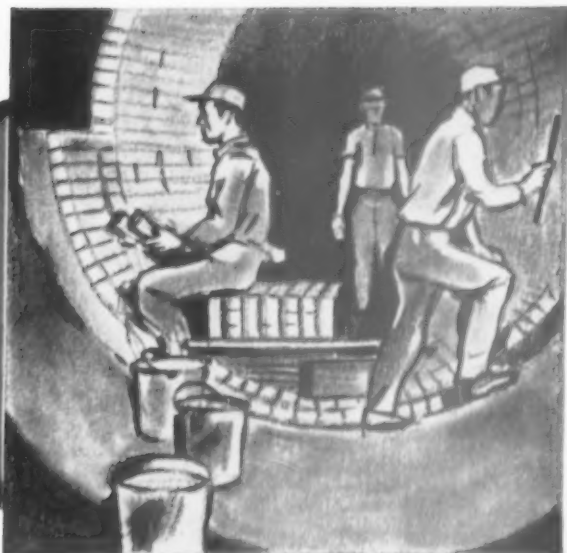
ONE MORNING the company posted a notice in all locker rooms that employees would be required to be on their jobs when the shift began. It seems that previously, workers would take time to get into their work clothes and would not get to their tasks until 5 or 10 min. after the shift bell sounded.

The day after the notice appeared, a group of union officials gathered outside the plant gates and told the employees that the company's new rule was invalid. The union people set up a loudspeaker system and discouraged the workers from going into the plant any earlier than they had in the past. As a result of this, quite a few employees arrived at their work places 5 to 10 min. after the shift started.

The employees were not disciplined, but the union officials who worked in

*(Continued on page 32)*



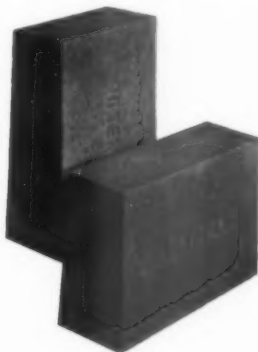


# MAGNECON

## IN YOUR ROTARY KILN

Magnecon performance in more than twenty countries throughout the world brands it as the outstanding product for such installations.

An informative booklet on "choosing a hot zone refractory to meet your kiln conditions" is available on request. Write today for your copy.



Magnecon, the hot zone refractory kiln liner, helps you obtain the lowest refractory cost per barrel of clinker

because:

- It rapidly builds up a sound coating;*
- Maintains coating under severe operating conditions;*
- Resists chemical attack at the highest operating temperatures;*
- Withstands spalling under all operating conditions.*

Magnecon will meet all your problems under all conditions:

- Burning temperature—silica ratio uniformity*
- of kiln feed analysis—frequency of mix changes—*
- kiln shell condition—uniformity of load—*
- frequency of shutdowns.*



**CANADIAN REFRACTORIES LIMITED**

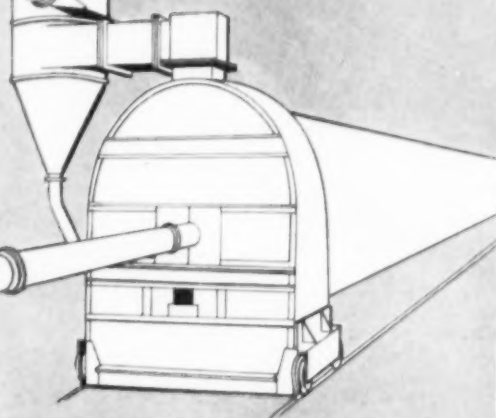
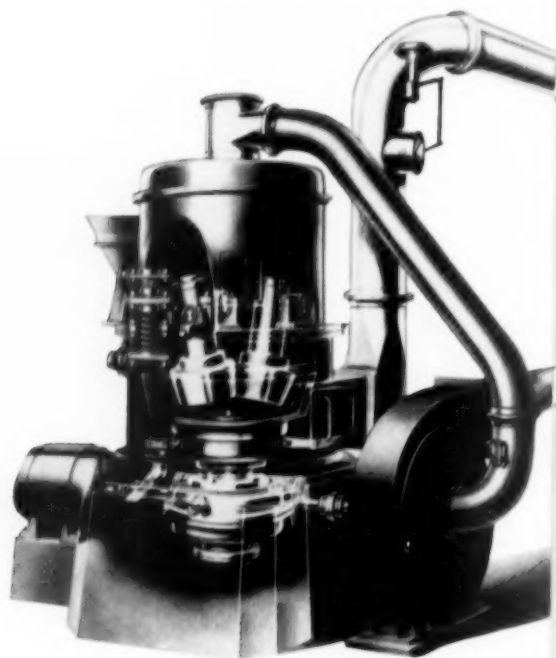
Canada Cement Building  
Montreal, Canada

Subsidiary of Harbison Walker Refractories Company, Pittsburg, Penn.

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# Improve *your* KILN PRODUCTION

*with* **RAYMOND**  
Bowl Mill Firing



Modernize your cement plant by using this fully coordinated and automatically controlled system of coal pulverizing and kiln firing.

The Raymond Bowl Mill is specially designed for the job with a unique principle of operation . . . the "bowl", or grinding chamber, revolves around the rolls. This results in centrifugal action that constantly forces the coal between the grinding elements and, since there is no metal-to-metal contact, the coal grinds on itself, insuring rapid reduction and high efficiency. The operation is completely noiseless, and without vibration.

The practical advantages of the Bowl Mill are: uniformity of grind on coal of any grade or moisture content . . . proper coal-air mixture to the burner at all times . . . extra high availability and flexibility in control . . . automatic rejection of tramp iron and impurities in the coal . . . smooth, dustless operation . . . record low maintenance and operating costs.



#### PANEL BOARD CONTROL

Gives a continuous operating picture of Bowl Mill performance. A single unit or a battery of Bowl Mills easily operated by one man.



For further details and performance records of Raymond Bowl Mills, ask for Catalog #75.

SALES OFFICES IN  
PRINCIPAL CITIES

# COMBUSTION

## RAYMOND DIVISION

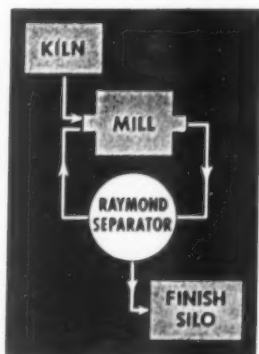
# Increase *your* CEMENT CAPACITY

This is the key unit to economy in your closed circuit grinding operations in making cement clinker or raw mix. By using the *double whizzer* type of Mechanical Air Separator, you can obtain a wide range of control in particle size.

With the grinding mill properly adjusted for the different degrees of fineness desired, it is possible to control the specific surface area, so as to produce either the standard grades or the high early strength cements merely by setting the vertical slide dampers from the outside.

When the Separator is used in closed circuit with a mill, the overall capacity of the combined unit is always increased to such an extent that the addition of the Separator, with its power, is more than justified, resulting in extra economies. Capacity increases have varied from 25% to 100% or more, depending on the type of mill and grinding characteristics of the material.

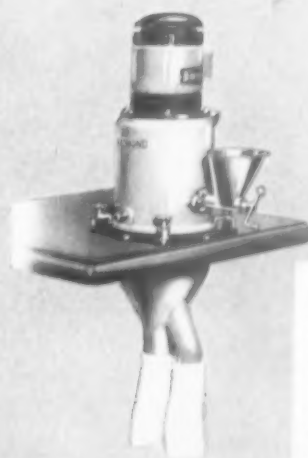
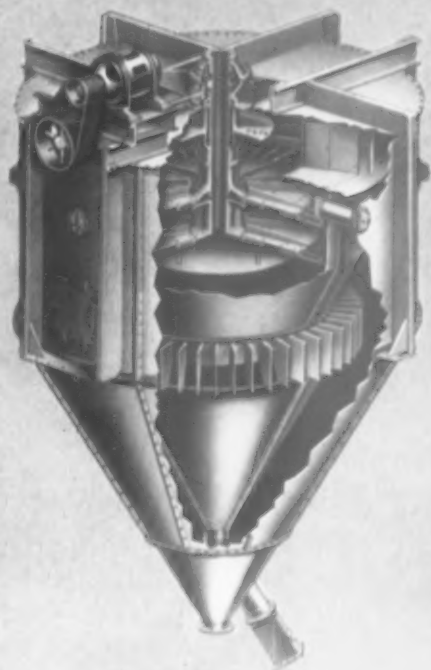
Whether classifying cement, limestone, lime silica, gypsum, chemicals and a variety of other materials, the Raymond Whizzer Separator is equally effective. It insures close separation of the fines, consistent uniformity and low production costs. When used on abrasive materials special protective liners are provided.



Showing how the Raymond Mechanical Air Separator provides an important link in the closed circuit operation of grinding mills for cement production.

Write for  
Separator  
Bulletin

## with **RAYMOND** Whizzer Separation



Raymond Laboratory Separator . . . a small 10-inch diameter unit for making test runs for any type of fine particle size materials.



# ENGINEERING, INC.

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CHICAGO 22, ILLINOIS  
Combustion Engineering-Superheater Ltd., Montreal, Canada

SALES OFFICES IN PRINCIPAL CITIES

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ROCK PRODUCTS, August, 1957

31

## Labor Relations

continued from page 28

the plant were all given a week's suspension. When the case came to arbitration, the union men argued:

1. You have no right to discipline us because our activities took place outside the plant, and on our own time.
2. We were just holding a union meeting off company property. That's none of management's business.
3. Our activities did not affect production.
4. You didn't discipline the employees who came in late, so why take it out on us?

The company argued:

1. Your activities outside the plant were not a normal union meeting. As a result of your harangues, production was interfered with since many employees came late.
2. You instructed employees to disobey a plant rule. This you have no right to do. If you didn't like our rule, take it up through the

grievance machinery. That's what it's there for.

Was the company:  
Right? ☐ Wrong? ☐

What Arbitrator I. R. Feinberg Ruled:

"Employees must normally obey instructions given by the company, even though they believe such rules to be improper. Their remedy is prescribed by the grievance machinery. By the same token, a union officer has no right to direct an employee to disobey a company rule. His authority is expressed in the duty to take the matter up with supervision and to seek an adjustment through negotiations and the grievance procedure. It is clear that these union officials stationed themselves outside the plant to advise employees to disobey a rule. The suspension meted out by the company is therefore justified. Grievance denied."



### Can you fire a worker for threatening a foreman?

What Happened:

**F**OREMAN PARRISH came into foreman Brown's department and asked to borrow an extension cord. "Sure, help yourself," Brown said. "Take any one that isn't being used."

Parrish walked over to Bill Winter's bench and picked up an extension cord which was lying there. "Don't you touch anything on my bench!" yelled Winter, jerking the cord out of

Parrish's hand. "Or you won't live to use it!"

"Well, if that's the way you feel about it . . ." said Parrish and released the cord. As Parrish walked off, Winter swore after him. Later that day, Winter was fired. He protested, and when the matter came to arbitration he maintained:

I. All I did was make a mild pro-

test about Parrish's habit of walking off with things anytime he felt like it.

2. Parrish and Brown had it in for me for a long time, so it wasn't fair to take their word against mine about what happened.
3. Other workers have had fist fights on the job and not been fired.

The two foremen answered:

1. That was no mild protest. Winter made such a racket that he attracted everybody's attention, in spite of the noise of machinery.
2. Winter must have a persecution complex. We never discussed him between ourselves.
3. Fighting with other workers is one thing. Yelling threats at a foreman is something else again—and much more serious.

Were the foremen:  
Right? ☐ Wrong? ☐

What Arbitrator Walter Boles Ruled:

"The Arbitrator has no choice except to find that Mr. Winter did voice a threat to Mr. Parrish's life. Threats of bodily harm are, of course, to be avoided at all times. But this is especially so where supervisor and supervised are concerned. No business enterprise can be expected to function effectively if those supervised threaten and revile their supervisors. Order and discipline and productivity and morale disappear under such circumstances. If it had been established that in other instances employees had been involved in equally serious incidents with supervisors and had not been discharged, the Arbitrator would have had something on which to base a finding of 'discrimination.' But the cases cited to support this contention involved altercations between employees. All other things being equal, the threat to general discipline in a work situation is much less serious when Employee A pokes Employee B than when Employee C makes an unprovoked attack on Supervisor D. And it is realistic and proper (having in mind the use of disciplinary action as a deterrent to future infractions), that the disciplining of Employees A and B for their hassle should be less severe than that of Employee C for attacking Supervisor D, or threatening his life, or cursing him. The grievance must be, and is herewith, denied."

END



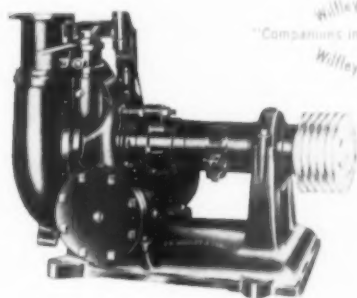
# WILFLEY

## CENTRIFUGAL PUMPS

### CONCRETE REINFORCING

... for this towering structure  
was mixed from cement, manufactured at  
lower cost using Wilfley Sand Pumps.

Industry specifies Wilfley because it is a name that guarantees on-the-job dependability and economy. Wilfley Sand Pumps assure lower pumping costs through higher efficiency, longer pump life, lower maintenance costs and 24 hour, trouble-free operation. These always-reliable pumps can solve your pumping problems. Available with long-wearing parts of hard alloy or abrasion-resistant rubber. Write, wire or phone for complete details.



Wilfley Sand Pumps  
"Companions in Economical Operation"  
Wilfley And Pumps

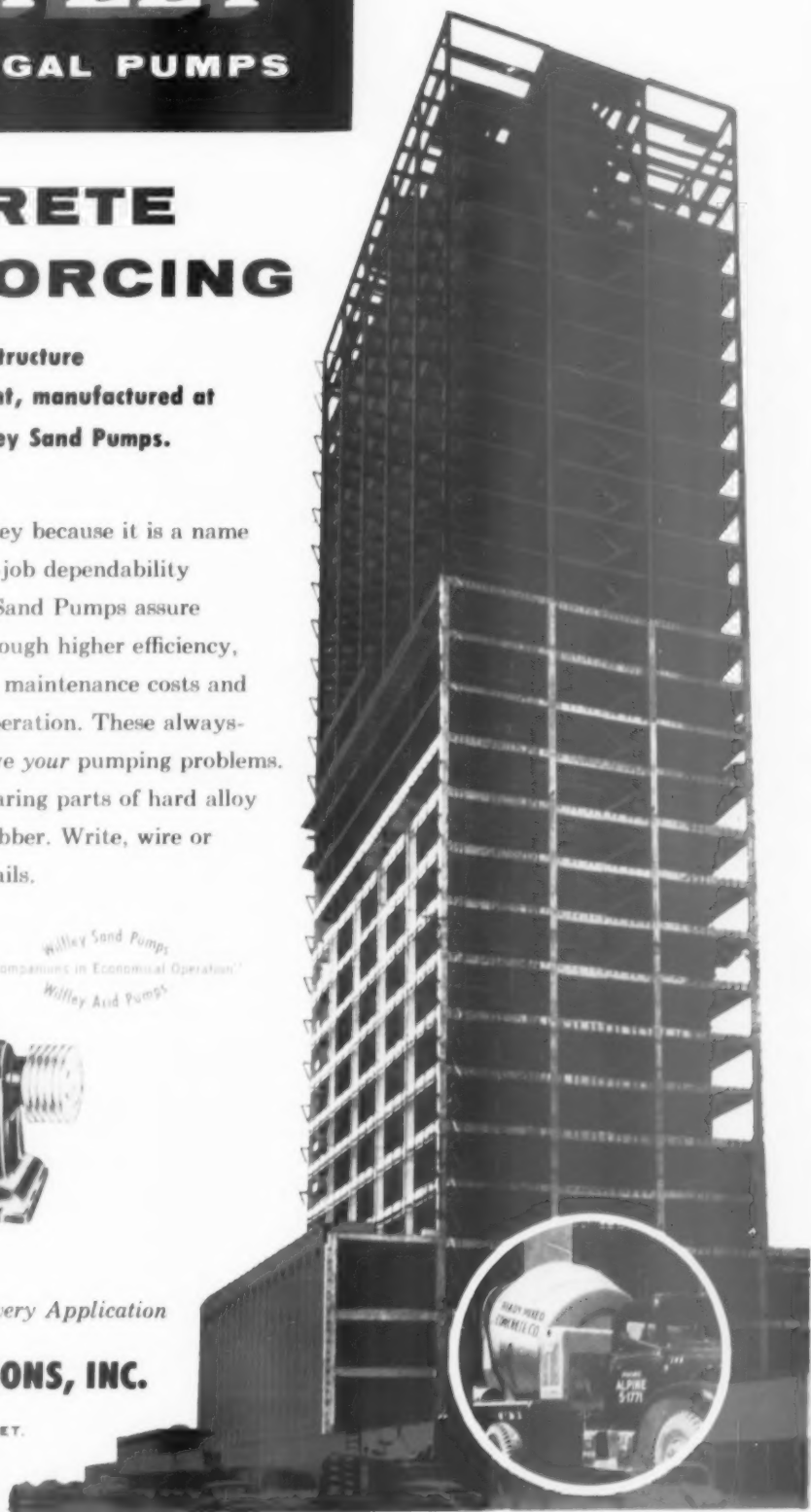
*Individual Engineering on Every Application*

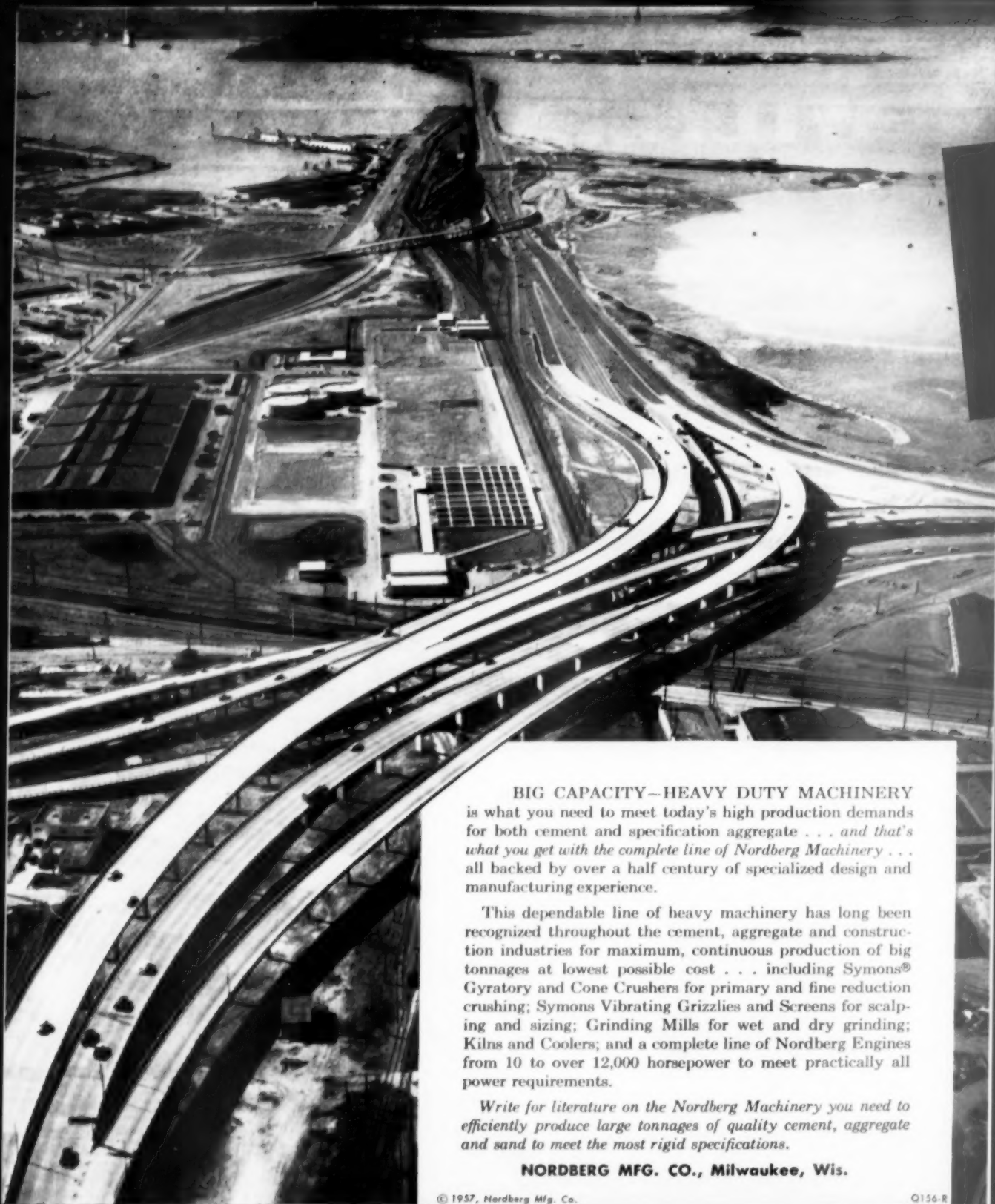
**A. R. WILFLEY and SONS, INC.**

DENVER, COLORADO, U. S. A.

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NEW YORK CITY 17





Typical of today's modern highway construction is this view of the new Freeway in Oakland, Calif., showing 3 levels of highway structure over 2 levels of railroad.

(Photo courtesy California Division of Highways)

**SYMONS . . . A Registered Nordberg Trademark known throughout the world.**

**BIG CAPACITY—HEAVY DUTY MACHINERY** is what you need to meet today's high production demands for both cement and specification aggregate . . . *and that's what you get with the complete line of Nordberg Machinery . . . all backed by over a half century of specialized design and manufacturing experience.*

This dependable line of heavy machinery has long been recognized throughout the cement, aggregate and construction industries for maximum, continuous production of big tonnages at lowest possible cost . . . including Symons® Gyratory and Cone Crushers for primary and fine reduction crushing; Symons Vibrating Grizzlies and Screens for scalping and sizing; Grinding Mills for wet and dry grinding; Kilns and Coolers; and a complete line of Nordberg Engines from 10 to over 12,000 horsepower to meet practically all power requirements.

*Write for literature on the Nordberg Machinery you need to efficiently produce large tonnages of quality cement, aggregate and sand to meet the most rigid specifications.*

**NORDBERG MFG. CO., Milwaukee, Wis.**

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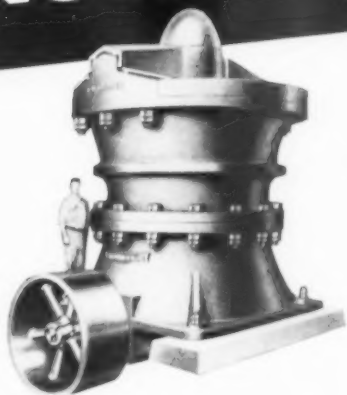
# NORDBERG



**MACHINERY FOR PROCESSING ORES and INDUSTRIAL MINERALS**

NEW YORK • SAN FRANCISCO • ST. LOUIS • DULUTH • WASHINGTON  
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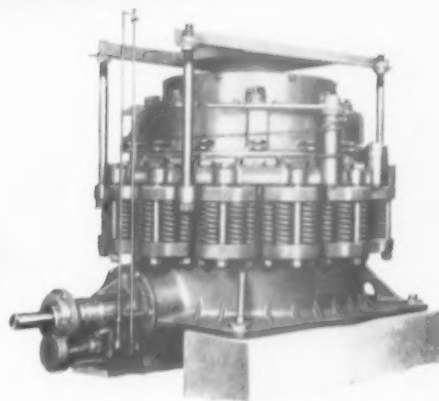
# GET **BIG TONNAGES** OF CEMENT AND AGGREGATE WITH **NORDBERG MACHINERY**



## **SYMONS® GYRATORY and CONE CRUSHERS**

Gyratory crushers built in sizes from 30" to 72" feed openings, for capacities up to 3500 or more tons per hour.

Cone crushers built in Standard, Short Head and Intermediate types, in sizes from 22" to 7', in capacities from 6 to 900 or more tons per hour.



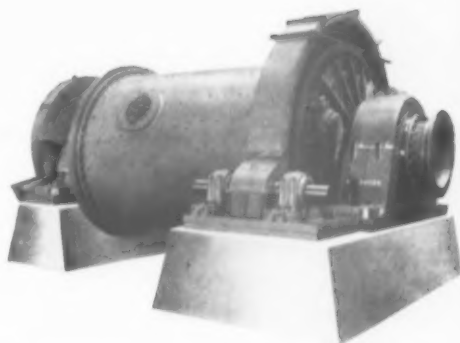
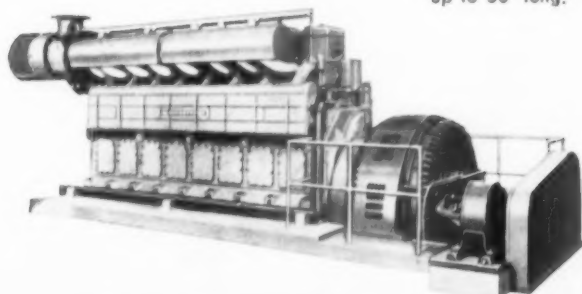
## **SYMONS VIBRATING SCREENS and GRIZZLIES**

Built in a wide range of types and sizes to meet practically all requirements from heavy scalping to fine screening applications.



## **NORDBERG GRINDING MILLS**

Include ball, pebble, tube, rod and compartment types for wet or dry, open or closed circuit operation. Sizes to 13' diameter and up to 50' long.

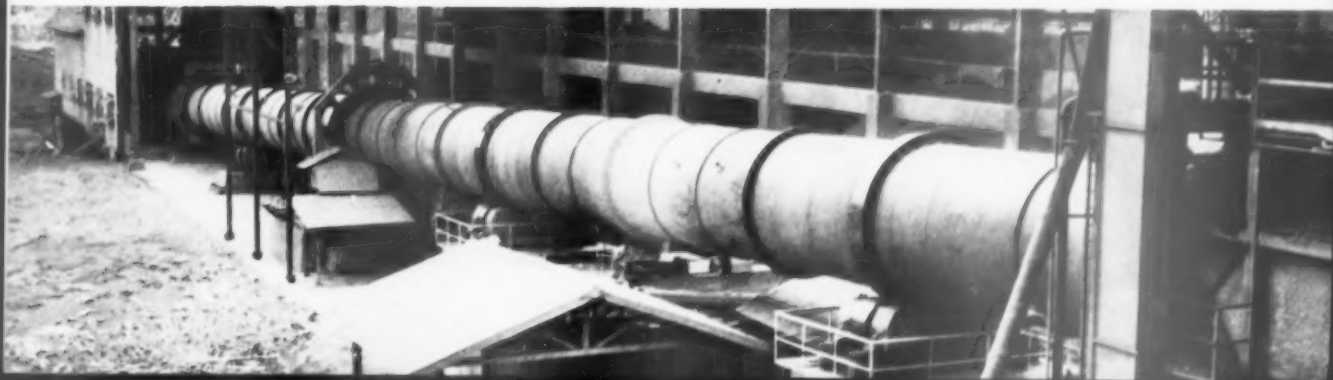


## **NORDBERG ENGINES**

Built in a wide range of sizes from 10 to over 12,000 horsepower, including Diesel, Dualfuel® and Spark-Ignition Gas types for low cost power generation.

## **ROTARY KILNS**

Nordberg Kilns, Dryers and Coolers are built for pyro processing operations, calcining, burning and cooling.



# ***G-800 TRACDRIL***

**GOES  
WHERE  
YOU  
WANT  
IT...**

And starts drilling! Just one man can move a self-propelled CP TracdriI from hole-to-hole in double-quick time . . . requires no "bull work" . . . tows its own compressor. "Knee-action" tracks compensate for uneven ground. A hydraulically operated U-Arm assures quick positioning for running bench holes or lifters. Hard hitting 4" CP-400 Drill and CP Drill Carriage are combined to afford maximum drilling speed, feed and stability.

Reversible tramming motors enable the TracdriI to whip into reverse, go forward and pivot . . . have "dead man controls" for greater safety.



## **Chicago Pneumatic**

8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS  
DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS  
VACUUM PUMPS • AVIATION ACCESSORIES





# PEOPLE

## IN THE NEWS

### Stanton Walker receives Frank E. Richart award



STANTON WALKER, director of engineering, National Sand and Gravel Association and National Ready Mixed Concrete Association, Washington, D.C., received the second Frank E. Richart Award at the 60th annual meeting of the American Society for Testing Materials in Atlantic City, N.J. The award, which commemorates Frank E. Richart, a vice-president and honorary member of the Society, is made not oftener than every three years for outstanding contributions in the combined fields of concrete and concrete aggregates.

Mr. Walker has been a member of A.S.T.M. since 1920, has been active as an officer and a member of many of the Society's committees in the fields of concrete, concrete aggregates, highway materials and methods of testing, and has served as a member of the executive committee of the board of directors. He is also a member of the American Society of Civil Engineers, American Institute of Mining, Metallurgical and Petroleum Engineers, past president of the American Concrete Institute, and past chairman of the Highway Research Board.

A graduate of the University of Illinois, Urbana, Ill., Mr. Walker joined the Portland Cement Association in 1917 as research engineer. He became director of engineering of N.S.G.A. in 1926 and of N.R.M.C.A. in 1930.

He is also director of the N.S.G.A. Research Foundation and of the N.R.M.C.A. Research Laboratory at the University of Maryland.

### I. M. C. C. director

THOMAS M. WARE, administrative vice-president, International Minerals and Chemical Corp., Chicago, Ill., has been elected a director of the company. He replaces David M. Milton, who has retired. Mr. Ware also assumes the duties formerly handled by James P. Margeson, executive vice-president, who has retired. Dr. Milton Lebaron has been elected vice-president in charge of research. He succeeds Dr. Paul V. Manning, who will serve as senior technical vice-president until his retirement next year. William Bellano has been named vice-president in charge of engineering and Anthony E. Cascino has been appointed vice-president in charge of marketing.

### General superintendent

CHARLES H. WICKS, engineer, has been appointed general superintendent at the Rockdale plant, Joliet, Ill., of Chicago Gravel Co., Chicago, Ill. He succeeds G. E. Singletary, who will serve in a consulting capacity. D. E. Hammond has been named assistant general superintendent at the Hammonds plant, Elgin, Ill.

### Marblehead Lime promotions

GEORGE ROSINSKI has been appointed sales manager of the industrial division of Marblehead Lime Co., Chicago, Ill., according to an announcement by Wallace E. Wing, chairman of the board. D. W. Branan has been named sales manager of the construction division, and Lloyd Robinson has been made assistant sales manager. Mr. Rosinski has been with the company since 1926 and has been assistant sales manager for several years. Mr. Branan, who has been with Marblehead Lime since 1950, was formerly merchandising manager. Mr. Robinson has been in the sales department for six years, most recently as assistant to M. R. Mathews, vice-president in charge of sales.

### Assistant plant manager

GEORGE N. WHIPPLE has been named assistant plant manager of the Buffalo, N.Y., plant of Lehigh Portland Cement Co., Allentown, Pa., according to an announcement by P. A. Groll, executive vice-president of manufacturing. Mr. Whipple graduated from Iowa State College, Ames, Iowa, with a degree in mechanical engineering. He joined the Mason City, Iowa, plant of Lehigh in 1950 as a mechanical engineer. In 1952, he was transferred to the Sandt's Eddy, Pa., plant and appointed plant engineer. In 1953, he was transferred to Buffalo where he has served as plant engineer until his present appointment.

### T. C. Powers chosen for Sanford E. Thompson award



T. C. POWERS, manager, basic research section, Portland Cement Association, Chicago, Ill., received the Sanford E. Thompson Award established by Committee C-9 on Concrete and Concrete Aggregates, American Society for Testing Materials, at the Society's 60th annual meeting in Atlantic City, N.J., for his outstanding work in the field of concrete and concrete aggregates.

Mr. Powers has been a member of A.S.T.M. since 1951 and is author of many papers on concrete research. In addition, he holds membership in the American Concrete Institute and the American Chemical Society. He received the Wason Research Medal of

(Continued on page 44)



# **Bigger production— bigger profits**

**with modern rubber-tired tractors  
of greater speed and mobility**





### Today's needs demand tractors that have 4 major dimensions

Your tractor requirements for work around pit and plant have changed considerably during the past few years. Time was when you could evaluate tractors on their drawbar pull or push — a combination of engine horsepower and the amount of traction developed. These 2 dimensions — *power and traction* — gave you the necessary performance to handle clean-up around yesterday's shovels... let you strip topsoil and level fill, in step with the production needs of that time. Fast dozing cycles, and the ability to speed from one assignment to another, were not considered essential back in the days of lower wages and longer time limits.

But today, with larger pits, big-capacity shovels (where clean-up interruptions are costly), and the demand for higher efficiency on stripping and maintenance work, *two new dimensions* are added to your tractor requirements. These extra dimensions are *speed and mobility*. Bigger shovels, with high operating cost, demand that clean-up delays be kept to a minimum. Higher production demands, to meet competition, require more speed all the way... from stripping overburden to leveling dump areas... pulling or pushing scrapers... towing equipment, and other tractor assignments.

With the trend to bigger pits and more widely scattered operations, *mobility* must be added to speed for efficient tractor operation. To handle scattered assign-

ments economically, your tractor must be able to run — not crawl — from job-to-job under its *own* power.

Track-type tractors can capitalize fully on two of these dimensions — power and traction. Over the years they have become so universally well-recognized that a wide selection of track-type tractors, ranging in size to 436 hp, are offered by various manufacturers.

A few of these present-day heavy track-type tractors approach the third dimension — speed — in their work range. But a big track-type tractor that successfully utilizes the fourth dimension — *mobility* — is not yet available to meet today's need.

That is why you must think today of tractors in terms of *all four dimensions*... power — traction — speed — and *mobility*... to determine which of today's tractors will give you the greatest return on your investment.

To help you in your analysis of these heavy-duty tractors, and the extent to which they can measure up to your requirements, study the information presented on the following pages which explain in detail your need for

#### 1. POWER

#### 2. TRACTION

#### 3. SPEED

#### 4. MOBILITY

**Before you buy, check all four dimensions. ►**

## Dimension 1

# POWER

**Compare engine horsepower...  
but as a source, not a "force"...**

Adequate power is as important in today's pit operations as it was yesterday. It must be measured today, however, not only by its ability to "bull" a load, but by its ability to move the largest possible loads at the highest possible speeds, in the varied and scattered jobs assigned to present-day pit tractors.

Maximum horsepower ratings alone are without meaning. Ratings must be studied across the speed range to measure your power dimension. Measure also the time and effort required for the operator to change his ratio of power application to push-pull effort or to speed effort. Check the smoothness with which power is applied, the waste in "bucking" a load. Also, the

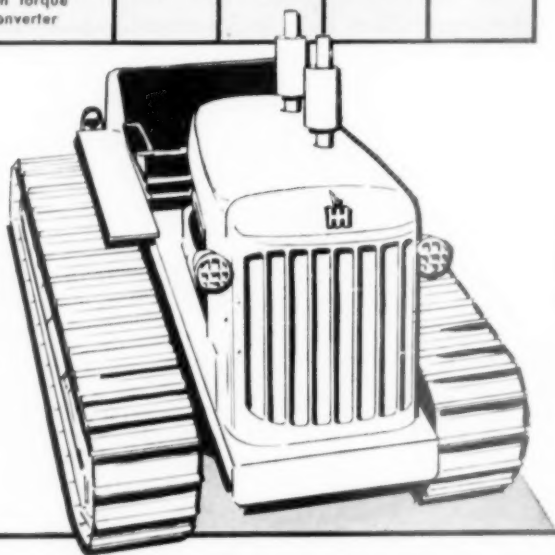
difficulties in shifting which may discourage an operator from using gear ratios to apply his power effectively.

Power at maximum "drawbar" is used little for tractive effort since, in low gear, tracks spin and power is wasted. Availability of maximum horsepower is important only in higher gears where it can be used with no slippage. All tractors are able to spin their tracks or wheels in low gear on normal footing . . . therefore horsepower should be considered as a power source available for use in *any direction* . . . should not be related to tractive effort alone. The most effective power combination lets the operator work at the highest practical speeds which job conditions permit.

CAT D8 191 hp with torque converter	MPH (Approx.)			
	1.5	2.0	2.5	3.0
	Pounds of pulling effort			
	30,000	24,000	18,000	15,000



IH TD24 200 hp with torque converter	MPH (Approx.)			
	1.5	2.0	2.5	3.0
	Pounds of pulling effort			
	32,500	22,500	18,000	15,000



Usable pounds-pull results from many factors: type of material, conditions underfoot, weight of tractor, and forward speed, all combined have a definite effect on the pounds of drawbar pull.

From the charts, you can see that Tournatractor compares favorably with track-type tractors at today's commonly used speeds. When job conditions are adverse, use a crawler; in ordinary and favorable conditions you can put your job into high gear with rubber-

Figures taken from manufacturers' specification sheets available to us at time of printing.



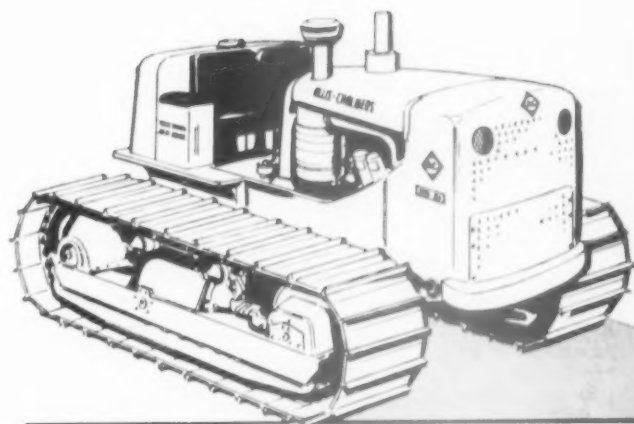
## Dimension 2

# TRACTION

**Compare pounds pull...  
but at your operating speeds...**

The materials you handle partially determine your choice of tractors. Track-type tractors conquer the most adverse conditions and offer tremendous traction and drawbar pull in ordinary footing. However, today's broad, deep-treaded, tapered-bead rubber tires equal track-type traction in many materials. Where traction in loose materials is a factor, the rubber-tired tractor can be given additional traction by increasing its weight. Extra weight is easily obtained with hydroflation of tires.

This flexibility of weight will pay off in providing a tractor that can utilize its speed to the fullest extent — yet add tractive effort when needed to do a wider range of heavy-duty tractor work.



LeT-WEST C** 210 hp with torque converter	MPH (Approx.)			
	1.5	2.0	2.5	3.0
	Pounds of pulling effort			
	24,700*	23,500	18,800	15,650

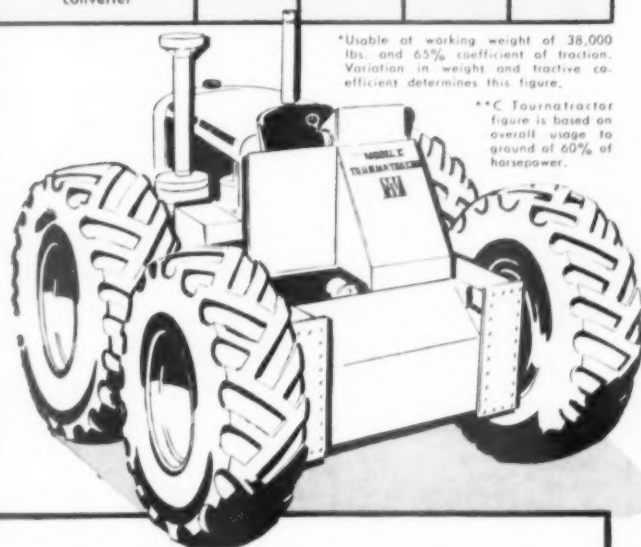
\*Usable at working weight of 38,000 lbs. and 65% coefficient of traction. Variation in weight and tractive coefficient determines this figure.

\*\*C Tournatractor figure is based on overall usage to ground of 60% of horsepower.

AC HD21 204 hp with torque converter	MPH (Approx.)			
	1.5	2.0	2.5	3.0
	Pounds of pulling effort			
	Pounds-pull curve not shown in manufacturers' literature available to us.			

Comparable traction of tires to tracks, in some materials, is made possible by a wide choice of tire treads. A smooth-type tire, for example, works better than tracks in sand, because it doesn't dig in. Deep lateral cross-bars are designed for rock — the tire deflects over sharp rock and the deep tread prevents damage to the carcass. Diagonal bars give maximum bite in loose materials. Tournatractor tires — 2¼ feet wide, 5¾ feet high — are of double strength nylon cord and tough rubber. Inflated with only 20 pounds pressure, the tires flex over rough ground. Continual flexing of sidewall keeps the tread areas clean for a positive bite on each tire revolution.

Crawler tracks — long and wide — have shoes of steel with deep-biting grousers. At higher speeds, much of the engine output goes to power the tracks themselves. Much of the tracks' efficiency can be lost in gummy materials, since area between grousers fills in and tracks become smooth, flat belts. Accumulated mud and dirt on tracks and rollers also reduces theoretical power applied to pulling effort.



tired Tournatractor. Consider, too, how often you use all the traction available in track-type tractors. Ordinary dozing and push-loading are done in second and sometimes third gear, at speeds, ranging up to 2 miles per hour. High-speed dozing or loading with Tournatractor may require a thinner cut, but the excavated area is kept smooth, allowing faster travel of dozer and quicker entry and exit of scrapers. Too, it permits quicker return to work after wet weather.

Before you buy, check all four dimensions . . . see next page

## Dimension 3

# SPEED

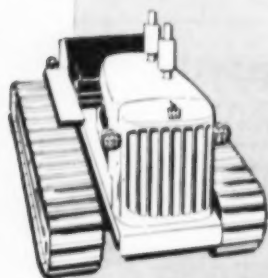
**Compare speeds,  
and what they mean to profit...**



**CAT - D8**

**SPEEDS IN MPH**

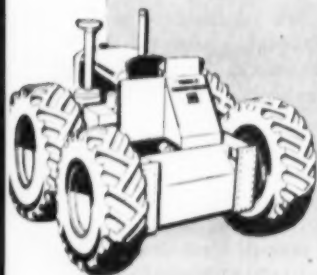
FORWARD	REVERSE
0 to 3.6 Low	0 to 3.6 Low
0 to 7.4 High	0 to 7.4 High



**IH - TD24**

**SPEEDS IN MPH**

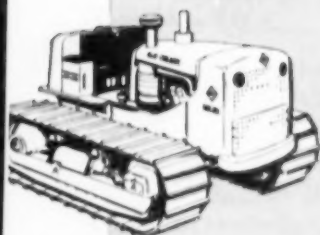
FORWARD	REVERSE
0 to 7.6	0 to 6.6



**LeT-WEST C**

**SPEEDS IN MPH**

FORWARD	REVERSE
0 to 17.2	0 to 7.2



**AC - HD21**

**SPEEDS IN MPH**

FORWARD	REVERSE
0 to 3.0 Low	0 to 5.5
0 to 7.5 High	

All above tractors equipped with torque converter. Figures taken from manufacturers' specification sheets available to us at time of printing.

Few heavy-duty tractors have kept pace with today's trend to high speed. Hauling units, loaders, shovels, scraper-combinations, and other types of pit equipment are now available on rubber for greater speed; yet most of the big tractors still roll on speed-limiting steel tracks. Habit, plus the large number of crawler-tractors still in use, make it easy to overlook the possibilities of profit and time advantage available through use of the speed dimension. For instance, on an ordinary dozing cycle, if speed can cut your back-up time in half, you can increase the number of cycles per hour on this saving alone by 15%! Since costs remain constant, this increase in production is almost entirely profit! There is another point on speed that may be of interest. As crawler speeds are increased, and as the high gear-ranges are more extensively used, you add materially to the track-wear and overall maintenance expense.

The farther the travel distance, the more closely you should look into the advantages of rubber in the third dimension — *speed* — to increase your profits.

Work	Operation	Time (minutes)		
		Average Crawler	Rubber-Tired Tractor	Speed Saved in Min.
Dozing	Pushing load .. 150 ft.	0.86	0.57	0.64
	Return ..... 150 ft.	0.36	0.21	
	Gear changes .....	0.30	0.10	
	TOTAL	1.52	0.88	
Pulling 15-yd. Scraper	Loading .....	0.75	1.25	2.51
	Hauling ..... 1000 ft.	2.10	0.76	
	Spreading .....	0.40	0.40	
	Return ..... 1000 ft.	2.10	0.63	
	Gear changes .....	0.30	0.10	
	TOTAL	5.65	3.14	
Push-loading	Loading .....	0.85	1.10	0.16
	Return .....	0.42	0.21	
	Gear changes .....	0.30	0.10	
	TOTAL	1.57	1.41	

Figures computed from manufacturers' specification sheets available to us at time of printing.

**RESULT:** With these minutes saved, you can doze more, haul more, do more clean-up . . . add extra profit with no extra cost.

## Dimension 4

## MOBILITY

**Why rubber-tired mobility  
means more work per shift**

Only a rubber-tired tractor can readily travel from job-to-job in your pit or plant operations. It can run at speeds to 17 mph, shuttle fast between shovel clean-up and other assignments. The operator just shifts into high gear and your tractor is on its way, via haul road or across the pit floor to its next job, whether to strip overburden, level stockpiles, tow other equipment, or switch railroad cars.

Larger pit areas, and higher production requirements, make it necessary to have equipment that can move around fast and easy on its own power.

So the need for high-speed mobility is increasing each year, while the time and cost of moving track-type equipment designed for limited area work becomes higher and higher, cutting profits more and more.

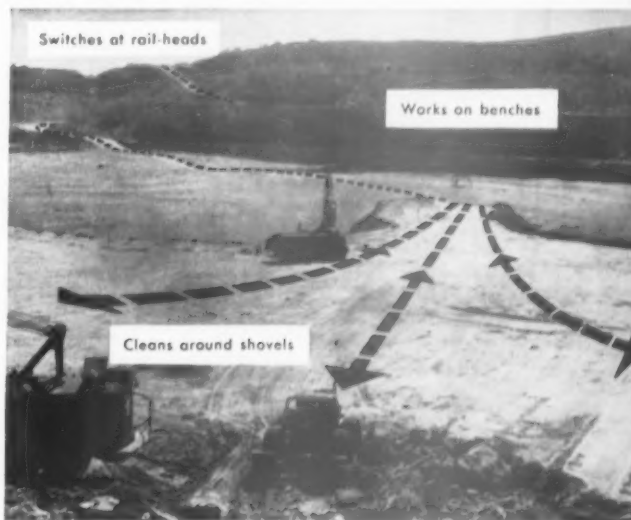
In the light of these developments, it will pay you to consider the importance of *mobility* as a necessary tractor dimension in your pit operations.

**Tournatractor®** is a modern tractor designed to take advantage of all four dimensions... *power, traction, speed and mobility*. It does not offer as much drawbar horsepower at speeds below 2 miles per hour as do track-type tractors of equal engine horsepower. But for pit operations where you can capitalize on the third and fourth dimensions — *speed and mobility* — with a machine that delivers comparable traction at present day speeds, we suggest you consider the *new* Tournatractor. The cost is 10% below that of track-type tractors with torque converters and comparable engine horsepower... and maintenance costs are lower.

There's a bonus-value for you in today's improved Tournatractor. A railroad coupler attachment is now available which converts this machine quickly to a practical SwitchTractor. With coupler at one end, and dozer at the other, this machine does double-duty... makes it an even more profitable tool for your pit operations. Your LeTourneau-Westinghouse Distributor will be happy to arrange a demonstration of a Tournatractor in your pit, to prove that its third and fourth dimensions — *speed and mobility* — can pay off for you. Ask him... or write the factory.



Rubber-tired tractor travels at speeds up to 17 mph on work-and-run assignments. Operator can drive over pit floors, or off road. He can road his machine over tracks, ties, switches, and paving, without damage.



Sketched lines show range of rubber-tired tractor in typical mine. In foreground, tractor cleans-up around shovel. It ranges over entire pit floor for dozing, and on benches bordering the pit. Rail-head is only a few minutes drive away for switching work.

CT-1424-M



**LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS**

*A Subsidiary of Westinghouse Air Brake Company*

**Where quality is a habit**

**Tomorrow's  
MODERN DESIGN  
for  
Today's Demands!**

## MORRIS PUMPS

**keep the aluminum industry rolling toward  
GREATER CAPACITY**

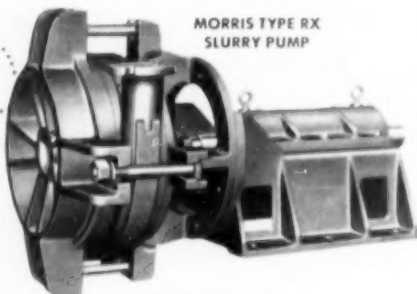
In pace with the far-sighted aluminum industry, other leading manufacturers the country over shrewdly specify Morris for heavy duty pumping.

The Morris Type RX Slurry Pump is rugged, dependable, and trouble free. It's specifically designed for heavy pumping, gives peak performance under all conditions, including heavy, coarse or fine slurries, dispersions and sludges.

The Morris pump operates with minimum attention . . . lowers maintenance costs . . . can be quickly dismantled for inspection . . . avoids lengthy lay-up time. For heavy duty pumping . . . specify Morris.

**WRITE TO MORRIS TODAY** for recommendations of the pump best suited to your size, capacity, specifications. Ask for Bulletin 185.

**MORRIS**  
CENTRIFUGAL  
PUMPS



MORRIS TYPE RX  
SLURRY PUMP

**MORRIS MACHINE WORKS**

Baldwinsville, N. Y.

Sales Offices in Principal Cities

Enter 1032 on Reader Card

## PEOPLE IN THE NEWS

(Continued from page 37)

American Concrete Institute in 1932, 1945 and 1948.

A graduate of Willamette University, Salem, Ore., Mr. Powers served as a chemist for the Oregon State Highway Commission before becoming concrete technologist from 1927 to 1928 for the Bull Run Dam built by the city of Portland, and in 1929 managed the Ready Mix Concrete Co. in Portland. In 1930, Mr. Powers joined the Portland Cement Association Research Laboratories in Chicago as associate engineer, becoming assistant to the director of research in 1934 and manager, basic research, in 1940.

### P. C. A. representative

ROBERT P. HOGAN has joined the Portland Cement Association as public relations representative in Iowa. For the last eight years he has been news bureau director for the Iowa Daily Press Association. A graduate of the State University of Iowa School of Journalism, Mr. Hogan succeeds Harrison G. Weber.

### Director of publications



ROBERT G. CONNER has been appointed director of publications and advertising for Permanente Cement Co., Oakland, Calif., according to an announcement by Wallace A. Marsh, vice-president and general manager. Mr. Conner has been with the Kaiser companies for nine years. He has most recently been public relations representative for Kaiser Services. Prior to this, he was publications manager for Kaiser Services and public relations

(Continued on page 48)

Enter 1033 on Reader Card





## how to have friends—even though blasting

There's a new, effective way to aid your public relations in communities where you are blasting. It's the interesting, informative sound film, in color, entitled, "*We're Blasting Near You.*"

When you show this film to PTA meetings, service clubs and other civic organizations, you can prove that you're a good neighbor . . . that blasting, while necessary, is nothing for people to be alarmed about.

"*We're Blasting Near You*" shows how modern millisecond delay techniques eliminate old-fashioned, jarring explosions . . .

how modern methods hold blasting noise to a muffled minimum, and make vibration unnoticeable. In a friendly, non-commercial way, the movie shows your efforts to be a good citizen in the community.

You can show this movie to any age group. It is accompanied by a kit containing news releases, sample speeches, safety posters and other helpful material which will make your public relations meeting a success. Write for available dates, and show "*We're Blasting Near You*" in your community!

Technical Customer  
Service Section  
**ATLAS**  
POWDER COMPANY  
WILMINGTON 99, DELAWARE  
offices in principal cities



# You can't beat

for **POWER . . . . .**  
**DESIGN . . . . .**  
**ECONOMY . . . . .**  
**STAMINA . . . . .**

... and the unusually good balance of GRIZZLY-KINGS make the big 30x42 size popular for both portable and stationary operation.

While famous Grizzly-King overhead eccentric jaw crushers are available in a full range of sizes from 12 x 36 to 42 x 48, at the present time the larger sizes are most popular due to the expanding needs for crushed stone products. This is particularly true of the 30 x 42 which can out-perform larger, competitive crushers, making it practical for and widely used in both portable and stationary plants. Its lighter weight and size with lower first and operating costs are definite advantages to the contractor who doesn't require the tremendous peak capacity of the 42 x 48 Grizzly-King, or who requires big capacity without forfeiting portability.

All Grizzly-Kings have many design and operating features of proven superiority over the entire jaw crusher field — better balance . . . larger feed opening to take larger rocks and greater feed rates . . . longer jaws for more crushing capacity and better nipping angle . . . larger bearings and shaft for longer, heavy-duty service life and lower maintenance . . . heavy flywheels for greater crushing impact and power savings. These and other advantages of these famous crushers are fully explained in Lippmann Grizzly-King Crusher Bulletin #1100B. Get your copy from your Lippmann Distributor, or write Lippmann Engineering Works, Inc., 4605 W. Mitchell St., Milwaukee 14, Wisconsin and learn the reasons behind Grizzly-King's success.

# LIPPMANN Grizzly-King

## JAW CRUSHERS

- • to break rocks faster
- • that breaks rocks easier
- • of long life and lower power costs
- • to give longer service with lower maintenance

### *Here's how a GRIZZLY-KING'S bite crushes at lowest costs per ton*

Here approaching the crusher is an unusually large load of stone that is only usual for a Grizzly-King. Two large shovels keep busy satisfying this Grizzly-King's appetite, hour-after-hour.

The first stone falls into Grizzly-King's jaws which are wider than others because rated size is measured at minimum jaw eccentric position instead of neutral or maximum as in ordinary crushers.

Now it has dropped into the long, scientifically-curved jaws. Their intermeshing corrugated faces, sure-grip nipping angle and non-choking throat makes every stroke a working stroke.

This shows how, without hesitation, the big rock is easily broken by the very first stroke. The long jaw with the positive nipping angle has prevented slippage, lost time and effort.



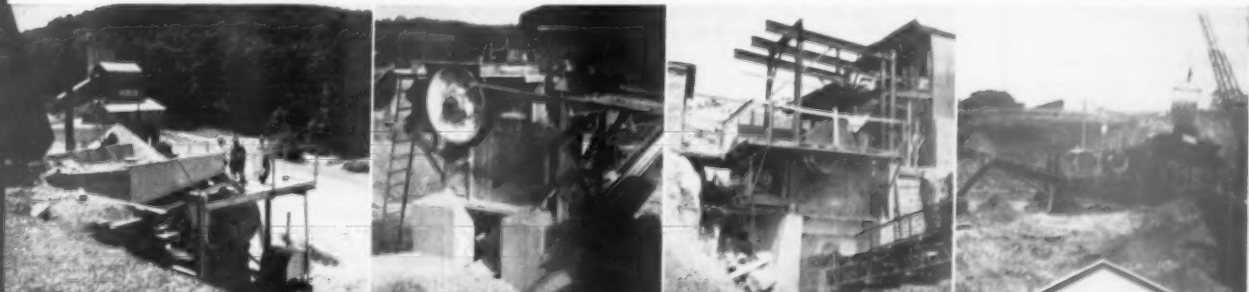
*... and the pay-off is steady, big production at lower power and maintenance costs ... easier controlled product size — day-after-day and year-after-year — that has increased profits and lowered costs for operators everywhere....*

Elizabethville, Pa.

Aquadale, N.C.

Lynchburgh, Va.

Algonquin, Ill.

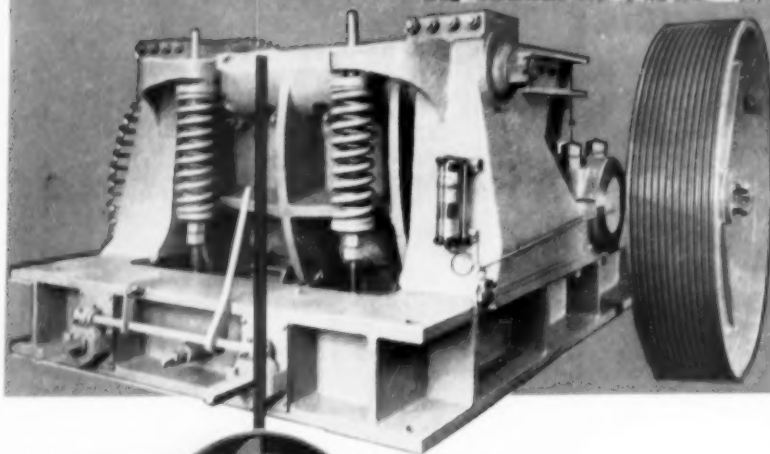


# LIPPMANN



CRUSHERS FEEDERS SCREENS CONVEYORS CRUSHING & WASHING PLANTS

**Toughest  
Crushing Jobs  
are done Most  
Effectively by**



## **ROCKMASTERS**

- Steelstrut Toggle automatically protects against damage from uncrushable materials.
- Will handle wet, frozen, sticky, muddy materials.
- Continuous crushing—can be choked without primary grizzlies or screens ahead.

High-capacity Rockmasters provide best economy in the most rugged crushing applications. Efficient for primary and secondary crushing, Rockmasters have been proved outstanding on many materials—including limestone, various ores, cement rock, coal, gypsum, hard shale and all similar materials. Low headroom, automatic lubrication and roller bearings on countershaft.

**Get All the Facts  
from this New Technical  
Data Bulletin No. RMTD-56**



**McLANAHAN & STONE  
CORPORATION**

**PIT, MINE AND QUARRY EQUIPMENT HEADQUARTERS SINCE 1835**

**252 Wall Street, Hollidaysburg, Pennsylvania**

Enter 1207 on Reader Card

### **PEOPLE IN THE NEWS**

(Continued from page 44)

representative for Kaiser Aluminum and Chemical Corp. at New Orleans, La. Before joining the Kaiser companies in 1948, Mr. Conner was with Tidewater Oil Co. in San Francisco, where he handled dealer sales promotion and advertising production.

#### **Sales managers**

GEORGE V. ARNOLD has been named southeast division sales manager for National Gypsum Co., Buffalo, N.Y., to succeed William H. Pulley who passed away recently. Formerly Atlanta district manager, Mr. Arnold will be replaced by Robert C. Smith, assistant manager at Atlanta.

Mr. Arnold, a native of Brooksville, Ga., joined National Gypsum Co. in 1938 as a general line salesman and was promoted to assistant manager for the Atlanta district in 1947. In 1952 he was appointed to the post of Atlanta district manager.

Mr. Smith began his career with National Gypsum Co. as a sales trainee in 1948.

#### **Haverstraw superintendent**



GEORGE W. ROBERTSON has been appointed superintendent of the Haverstraw plant of New York Trap Rock Corp., New York, N.Y. He replaces Edward G. Sullivan who has resigned to take a position in the Barrett division of Allied Chemical and Dye Corp. Mr. Robertson was formerly with the construction firm of Johnson, Drake & Piper, serving as superintendent of aggregates on the west Delaware River tunnel project built for the New York City Board of Water Supply. From 1943 to 1953 he held a similar position with the U. S. Engineering Department in the West Indies and South



America. He started in the construction industry in 1933, when he joined the Walsh Construction Co. in Colorado, remaining there for ten years. A native of Durango, Colo., Mr. Robertson attended Colorado State University. He studied civil engineering.

#### Vice-president and director



PAUL DUNCAN has been elected a vice-president and director of Marquette Cement Manufacturing Co., Chicago, Ill., in addition to his duties as assistant secretary and assistant treasurer. A graduate of the University of Notre Dame, South Bend, Ind., Mr. Duncan joined Marquette in 1933. He was appointed comptroller in 1947 and elected assistant secretary and assistant treasurer in 1951. His father, the late Stuart Duncan, had been chairman of the board for 23 years at the time of his death last year.

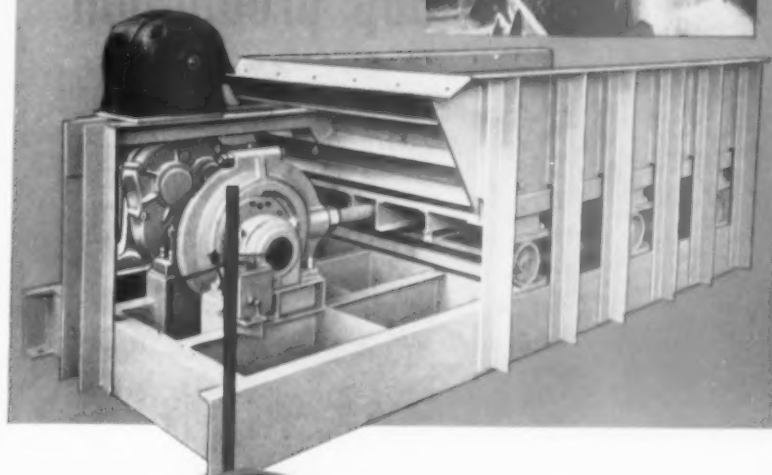
Officers re-elected at the recent board of directors meeting are W. A. Wecker, president; D. S. Colburn, vice-president; L. W. Saxby, vice-president; V. J. Hanley, vice-president, secretary and treasurer; S. L. Cribari, vice-president of sales; C. E. Wuerpel, vice-president; Frank Moyle, vice-president of operations; L. H. Vroman, vice-president; and Glen R. Ostrander, assistant treasurer.

#### Melvin H. Baker speaks to Security Analysts

MELVIN H. BAKER, chairman of the board of National Gypsum Co., Buffalo, N.Y., told a meeting of the New York Society of Security Analysts recently that tight money will keep housing starts down to "around 900,000 units" this year. But, he added, "money for home mortgages is easing a bit, the vacancy rate is low and the

(Continued on page 51)

## Drastic Savings in Handling Costs...



Reciprocating  
Plate

# FEEDERS

Get All  
the Facts  
from this  
New Feeder  
Bulletin  
No. FRE-157



Designed to handle all materials from sand to shovel-loaded rock . . . these units are the most efficient means of feeding uniformly-controlled quantities of materials to crushers, washers, conveyors and other machinery. In addition to providing substantial savings in material handling costs . . . these feeders lower repair and production costs by eliminating choke-ups, spills, overloads on motors and drives, wear and tear on machinery. Easily adjustable eccentric, force-feed lubrication.

**McLANAHAN & STONE**  
CORPORATION

*PIT, MINE AND QUARRY EQUIPMENT HEADQUARTERS SINCE 1835*

252 Wall Street, Hollidaysburg, Pennsylvania

# Helping Lehigh Portland Cement Co. keep production *HIGH*



Moving overburden to reach coquina shell at Flagler Beach, Fla.

Three loading stations fill rail cars with finished cement at the Bunnell, Fla., plant of Lehigh Portland Cement Co. It takes a busy, complex operation to keep these loading stations on the go. The operation begins beneath the Florida sand, where coquina shell is found. It is the principal raw material—used here for the first time in the U. S.—in the making of Portland cement.

Two giant Caterpillar DW21s, with No. 470 Scrapers push-loaded by a D8, move the sand overburden so a bucket can get at the shell. This is a job that calls for fast cycle time and plenty of stamina. The CAT® DW21 (Series C) supplies both. Powered by a Cat Turbocharged Diesel Engine with a maximum output of 300 HP, the DW21 can range in speed all the way from 2.3 to 25.1 MPH. It develops rimpulls up to 38,420 lb. It shifts easily, up or down, and steering is smooth. Its steering wheel really controls the unit, responding the way an automobile does. Its big wide-sectioned 29.5 x 29 tubeless tires give maximum flotation and traction and bring real cost savings over old-fashioned tubes and flaps.

Its partner, the No. 470 Scraper, incorporates a new, advanced engineering concept—LOWBOWL design. Here's a scraper that gets capacity loads in a hurry—18 yards struck, 25 heaped. It features a wider, longer bowl that holds more *heaped* yardage, with lower sides that cut overhead weight and internal friction.

Features like these help keep Lehigh Portland's production high. They can help on your operation, too. For complete details on any Cat wheel rig for pit or quarry, call your Caterpillar Dealer. Remember him, too, for expert service—and for parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

## CATERPILLAR\*

\*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**NAME THE DATE...  
YOUR DEALER  
WILL DEMONSTRATE**

## PEOPLE IN THE NEWS

(Continued from page 49)

number of families keeps rising. If this trend continues, home starts should get back to something more than a million next year."

Mr. Baker said he expects sales of National Gypsum for the first half of this year "will be around \$71 million." He disclosed the company will budget for sales of "about \$73 million for the second half of the year as compared to \$70½ million in the last half of 1956. The expected increase will come largely from the sales of new products," he said.

Recalling that National Gypsum has invested \$136 million in production facilities since the end of World War II, including \$55 million in the last two years, Mr. Baker said "our construction program currently calls for expenditures of about \$40 million spread evenly over this and the next two years."

He described "larger projects in progress" as the development of a new gypsum quarry in northern Michigan, development of a new asbestos deposit in Quebec and construction of new gypsum building products plants at Waukegan, Ill. and Lorain, Ohio.

The National Gypsum Co. chairman explained that the company's efforts to develop new products "are intended to add diversity and a larger market. Concentration for greater efficiency in the plants and in distribution will put the company in a strong competitive position."

### Warner promotions

JOSEPH O. SHEROD, general manager of lime and limestone operations at the Bellefonte, Union Furnace, Cedar Hollow, W. E. Johnson and Lehigh plants of Warner Co., Philadelphia, Pa., and James M. Criswell, controller, have been appointed to the senior executive group and will also serve on the operating committee. Stanley Bohn of the industrial engineering department has been named assistant to the plant superintendent, Robert Culshaw, at the new W. E. Johnson plant at Paoli, Pa. Michael Lingenfelter has been appointed assistant to Brower P. Kelly, Philadelphia sales manager. He succeeds Samuel Norley who resigned recently.

### Keystone appointments

EDWIN K. BORCHARD has been appointed technical consultant for Keystone Portland Cement Co., Philadelphia, Pa. Formerly technical manager, Mr. Borchard has been associated with the company for 22

years. John F. Hall has been named manager of the technical department. A graduate of Kansas State College with a civil engineering degree, Mr. Hall served in public works engineering in a supervisory capacity before joining the Portland Cement Association in 1946, becoming district engineer in 1948. He formerly served with the Pavlo Engineering Co., New York.

### Director of research

DR. THOMAS HARRISON DAVIES has been appointed director of research, Mellon Institute, Pittsburgh, Pa. Administrative head of the Multiple Fellowship sustained in the Institute since 1952 by the Pittsburgh Plate Glass Co., Dr. Davies has had a distinguished career in scientific research and its management.

## OBITUARIES

Arthur J. R. Curtis, safety director for the Portland Cement Association, Chicago, Ill., from 1926 to 1951, died November 10, 1956. He was 69 years of age. Mr. Curtis joined the P.C.A. in 1916 as director of extension. In 1926 he was appointed assistant to the general manager of the Portland Cement Association in charge of the Accident Prevention Bureau. In August 1951, he became assistant secretary and safety consultant, retiring in 1952.

In 1947 Mr. Curtis was awarded the Joseph A. Holmes medal of honor by the U. S. Bureau of Mines for his contributions to safety in the cement industry. He was a past president of



the American Society of Agricultural Engineers, secretary of the National Conference on Concrete House Construction, secretary of the National Safety Council for 16 years and a member of the executive board.

(Continued on page 54)

## A COMPLETE REFRACTORIES SERVICE...

for  
**Rock Products**

Whether it's a portland cement plant, a lime plant, a gypsum plant, or a kiln for burning dolomite and magnesite—we can supply all of your refractory requirements.

Here are some Grefco refractories which should prove of particular interest to you:

### RITEX MAGNESITE BRICK

— a patented, chemically bonded basic brick for lining the burning zone of rotary cement, dolomite and magnesite burning kilns subjected to service too severe for high alumina brick linings. RITEX also has applications in many vertical (shaft) limeburning kilns.

**STEELKAD BRICK**—a RITEX basic brick with steel plates already attached. It may provide major savings in your operation.

**HIGH ALUMINA BRICK**—These come in a full line of shapes and sizes. ARCO-70 (70% Alumina) is most generally recommended, though brick ranging from 50% to 85% Alumina can also be furnished.

As part of our complete refractories service, we have developed cements, mortars, plastics and castables for the service conditions which have proved long-lasting and economical. They meet all the varying requirements of dry or wet application and cold or hot sets. Delivered in cans or bags of various weights.

GENERAL REFRACTORIES CO.  
Philadelphia 2, Pa.



# GENERAL REFRACTORIES

# Now! A MAMMOTH for mining and quarrying

You can look to the Autocar AP-40 to provide a new way to profitable volume hauling. From face to breaker and back again, there's nothing to match its fast trip cycle. Under heavy, crunching loads and over a variety of grades, it provides extraordinary low-gear performance—and high-gear speeds between 25 and 33 mph. Its weight to horsepower ratio is 275:1—never before achieved in a heavy-duty truck.





# AUTOCAR rated 40 tons



The strength of this powerful unit rests solidly on the tough torque-resistant box frame of 1-in. plate with corrugated internal reinforcement of  $\frac{3}{4}$ -in. plate. Seven cross members. Depth of frame under load area,  $23\frac{1}{2}$  in.; length, 27 ft.  $11\frac{1}{2}$  in., weight 16,800 lb.

## AUTOCAR TRUCKS

Autocar Division, The White Motor Company  
Exton, Pa.



The AP-40 has a single drive line for simplicity of construction, economy of operation, and easy maintenance.

# ONE

**mighty 600 hp engine**  
**rugged transmission**  
**heavy-duty straight-line driveshaft**

Here are a few of  
the massive features  
of the AP-40

### Engine

V-12 turbocharged Diesel developing 600 hp, which means a weight to horsepower ratio never before obtained in heavy-duty trucks.

### Transmission

A brand-new transmission, with 9 speeds forward and 2 reverse, specifically designed to handle the power of the 600-hp engine. This is the first vehicle built with this transmission.

### Clutch

17-inch 2-plate clutch, manually actuated with air assist for ease of clutch pedal operation.

Clutch facing: Ceramic-metallic.

### Axles

Tandem rear axles with planetary gears located at the outer end of the wheels for easy accessibility. Forward rear axle has a double reduction carrier. Rear rear axle has a single reduction carrier with a matching ratio. Interaxle differential is of the 4-pinion, high traction type capable of transferring increased torque with the greatest possible traction.

### Body

27-cu.-yd. heavy rock body with chute construction, exhaust heated. Full cab protector.

### Hoist

Double acting, outboard mounted, telescopic type. Supports integral with frame. 70° dumping angle.



Enter 1086 on Reader Card

**ANOTHER  
AMERICAN HAMMERMILL  
PERFORMANCE REPORT**

**50,000 TONS OF -5" ROCK TO AGLIME  
... WITHOUT A SINGLE REPAIR**

**FIELD REPORT  
No. 21  
Illinois Quarry**

**TYPE OF CRUSHER:**

American ASC No. 4  
Up Running Hammer-  
mill.

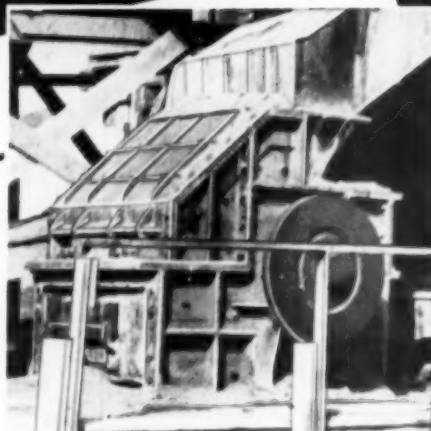
**OPERATION:**

Reducing minus  
5" rock to agri-  
cultural limestone.

**PRESENT CAPACITY:** 60-120 tons per hour, de-  
pending on moisture content of stone.

**PROBLEM:** Very wet rock, showing 8% moisture—  
sticky at all times.

**COMMENTS FROM USER:** "Hammer wear is  
remarkable: 9400-9700 tons of lime ground  
to 100%, passing No. 8 mesh, per set of ham-  
mers . . . Remarkably efficient mill . . . meets  
our requirements in every way."



*Write: for Bulletin  
No. 147—"Better  
Stone Crushing"*

**American**  
Originators and Manufacturers of

**PULVERIZER COMPANY**

Ring Crushers and Pulverizers

1245 Macklind Ave.

Enter 1034 on Reader Card

St. Louis 10, Mo.

ROCK PRODUCTS, August, 1957

**OBITUARIES**

(Continued from page 51)

**Claude K. Boettcher**, chairman of the board of Ideal Cement Co., Denver, Colo., passed away on June 9. He was 82 years old. A son of Charles Boettcher, a pioneer in the cement industry and founder of Ideal Cement Co., Mr. Boettcher became president of the firm in 1948 and served until May, 1952, when he was named chairman of the board. Among his many business interests were the Colorado Fuel and Iron Co., Brown Palace Hotel, Great Western Amalgamated, American Beet Co., American Crystal Sugar Co. and the Public Service Co. of Colorado. In recent years his fortune was dedicated mainly to philanthropic activities through the Boettcher Foundation.

**Andrew K. Humphries**, chairman of the board of Pacific Cement & Aggregates, Inc., San Francisco, Calif., died suddenly on June 16. He was 62 years of age. Born in Ouray, Colo., Mr. Humphries studied animal husbandry at the University of Wisconsin, Madison, Wis., which he put to good use in later years as a breeder of registered Hereford cattle. In 1925, he became vice-president and general manager of Pacific Air Transport Co., which later became United Air Lines. In 1927, he was elected vice-president of Boeing Aircraft Co., and in 1928 he became assistant to the president of United Air Lines. In 1930 Mr. Humphries entered the sand and gravel business in San Francisco which he built into one of the largest sand and gravel and ready-mixed concrete concerns in the world. His son, Richard K. Humphries, is president of the firm. Mr. Humphries was also president of the Pacific Intermountain Express which was rated top-ranking common carrier company in the trucking industry last year.

**Glenn J. Pierman**, president of Northwest Materials, Inc., Bryan, Ohio, died May 21 following a short illness. He was 53 years of age. Mr. Pierman was also president of Southern Michigan Materials, Inc., Hillsdale, Mich., and the Schumacher Stone Co., Pandora, Ohio. A native of Ottawa, Ohio, he attended Ohio Northern University, Ada, and Ohio State University, Columbus.

**Ford R. Sargent**, president of the Sargent Sand Co., Saginaw, Mich., and a former president of the Michigan Road Builders Association, died June 6 at the age of 71.

**END**

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## "We can't afford anything but CAT\*-built machines"

Ask Oscar J. Mortensen, owner of a gravel pit near Cascade, Montana, why he has Caterpillar-built equipment and you'll get this plain answer:

"We've used Caterpillar-built equipment since 1940. We've had very little trouble on repairs and costs are lower than on any other equipment we could use. If they weren't, we wouldn't own it. We can't *afford* anything but Cat-built machines."

How about service? "We get service and parts in a hurry," Mr. Mortensen says, "and the parts aren't out of line on price either."

A Caterpillar D9 Tractor with No. 9S Bulldozer is shown above at the Mortensen pit. Here it is "dozing" raw gravel to the conveyor of a crushing plant that produces 1,000 cu. yd. of ½ to 2 inch track ballast per 8-hour day.

Pit owners everywhere are enthusiastic about the giant D9 Tractor. In repeated tests where accurate records have been kept, one D9 has outworked *two* bull-

dozers of the next size. Blade loads average 12 cu. yd. and are handled at higher speeds.

The D9 is heavy (35 tons with the No. 9S Blade) and powerful (320 HP at the flywheel)—yet one of the easiest of all tractors to operate because of its power-boosted controls and excellent visibility. Maintenance is low, too. The D9 is available with either torque converter or direct drive with oil clutch.

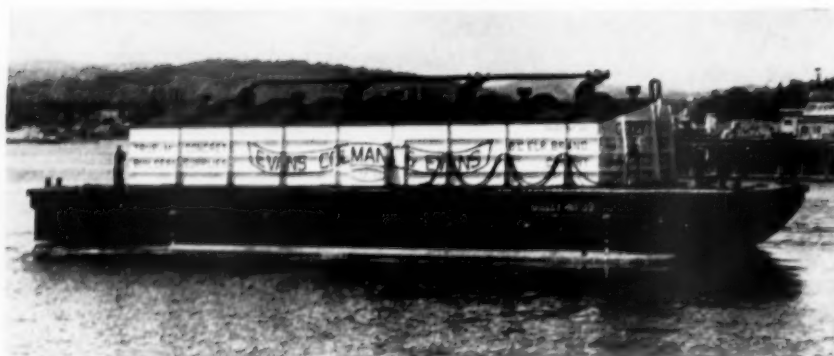
Everything about the D9 adds up to one thing: efficient production. Get all the facts from your Caterpillar Dealer; then try out the D9 in your pit. After you buy, depend on him for prompt service, parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

# CATERPILLAR\*

\*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**NAME THE DATE...  
YOUR DEALER  
WILL DEMONSTRATE**



## Fuller develops self-unloading



Close-up showing loading conveying line and diverting valves on top. Unloading line from Fuller Kinyon Pump extending through deck, lower right. Electrical cables for connection on shore, left.

To meet demand for faster and more efficient water transportation of bulk Portland cement, Fuller engineers came up with the answer . . . the all-pneumatic, self-unloading barge for Gilley Bros. Limited of New Westminster, British Columbia.

The barge is completely self-contained, with all unloading equipment and accessories on board. The hold comprises eight V-bottom hoppers, each equipped with open type F-H Airslide® fluidizing conveyors. Enclosed type Airslides convey from the hoppers to a Fuller-Kinyon stationary pump installed underneath the hoppers, the pump conveying the cargo to storage on shore. No mechanical equipment is used for conveying. Incidentally, the barge is also loaded by a Fuller-Kinyon system.



Barge tied up at pier unloading to storage on shore. Note flexible hose from barge, left, connected to permanent conveying pipe line leading into storage bin at left.



**FULLER COMPANY**  
102 Bridge St., Catasauqua, Pa.

SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION  
Birmingham • Chicago • Kansas City • Los Angeles • San Francisco • Seattle



## first all-pneumatic, bulk cement barge



Fuller Kinyon pump, right, underneath hoppers. Note enclosed type Airslides for delivering cement from hoppers to pump.

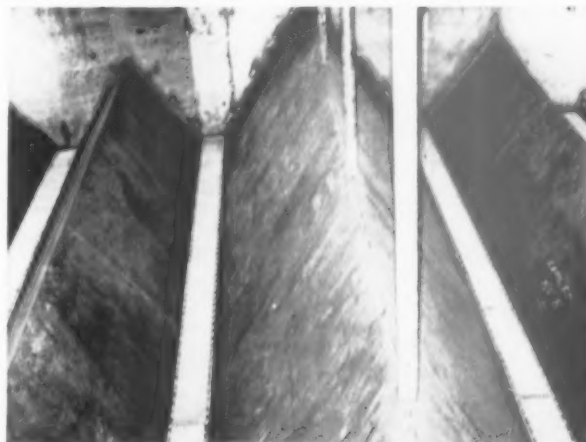
This barge has a carrying capacity of 4500 barrels and can be unloaded at rate of 450 to 600 barrels an hour, depending upon local conditions and distance of conveying. One very important feature is the fact that the cargo is completely unloaded, leaving practically no residue in the hoppers. Unloading requires only the part time attention of one operator.

Two 15 horsepower blowers furnish air to the Airslides and a Fuller Rotary Single-stage Compressor furnishes air at 30 pounds to the Fuller-Kinyon Pump.

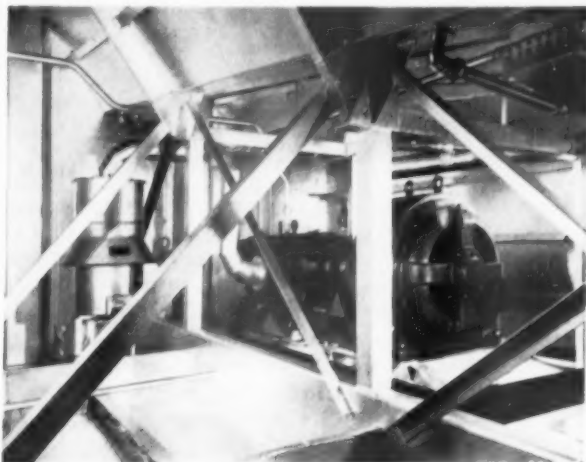
The initial unloading of the Gilley Brothers barge with a cargo of 4300 barrels was highly successful, complete discharge taking not over 8-1/2 hours. This performance has resulted in the purchase of a second barge of 5000 barrels capacity.

Here is but one example of how Fuller ingenuity and equipment are being put to work to help you cut costs and increase production.

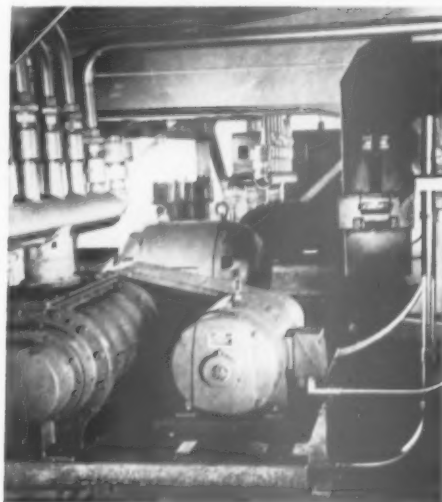
When you have a problem of conveying dry bulk materials, Fuller engineers will gladly make a study of your conditions and submit suggestions . . . this without any obligation on your part.



Looking down into the four V bottom hoppers comprising one end of the barge, showing open type Airslides.



Fuller rotary single-stage compressor which supplies air to the Fuller-Kinyon pump for unloading cargo to storage on shore.



Blowers which supply air for the F-H Airslides.

G-154-T  
3844

# The Big Fleets buy than any other make!

New Heavy Duty trucks offer you a choice of four modern Short Stroke V-8 engines—178 to 212 horsepower.



**Why?...because  
on-the-job performance and  
low operating costs prove  
FORD trucks cost less!**

Take a tip from the men who buy trucks every year. Official truck registration data for the past two years shows that owners of America's biggest commercial truck fleets have bought more Ford trucks than any other make!

Contractors and suppliers engaged in heavy construction work have found Ford trucks are best for their fleets. To begin with, Ford's initial costs are low. Many models are priced below all competitive makes.

## **FORD TRUCKS COST LESS**

# more FORD TRUCKS



**Ford's Tilt/Cab Models** are big in power, in capacity . . . up to 212 hp. Six series provide GVW's from 18,000 lb. to 30,000 lb., GCW's to 60,000 lb.

For example, the new Ford Tilt/Cab models are America's lowest-priced!\*

And it costs less to run a Ford truck! Thanks to modern Short Stroke power and sturdy chassis construction, operating costs and "shop time" are reduced. Another important Ford plus is longer truck life—a fact certified by independent insurance experts.

Add it all up—you'll find Ford trucks do cost less! Contact your Ford Dealer . . . let him show you why the big fleets are buying more Ford trucks than any other make.

\*Based on a comparison of manufacturers' suggested retail prices

LESS TO OWN

LESS TO RUN

LAST LONGER, TOO!

**Here's what 1957 Ford truck users have to say . . .**



Ford T-800 tandem dump owned by Goldring Trucking, construction material haulers, Fort Worth, Texas

"I've used Fords ever since 1935. I like Ford trucks because of the punishment they'll take. In my estimation, Fords are cheaper to operate," reports P. A. "Pete" Goldring, owner.



Ford F-600 dump platform owned by A. Teichert & Son, Inc., general engineering contractors, Sacramento, California

"We've been using Ford trucks for more than 10 years. They have been called on repeatedly for 'out-of-their-class' performance and have stood up very well," says Walter C. Petersen, supt. of equipment.



Ford T-750 dump truck owned by Glascock Brothers, construction material haulers, Litchfield, Ky.

"In comparison with other makes we've used, this Ford is as good a handling truck as you can buy. Our Fords are long-life trucks and they give us real service," says T. W. Glascock, partner.



MORE THAN 650 MILLION POUNDS OF TEXACO MARFAK HAVE BEEN SOLD

## How to boost yardage in a dust bowl

What causes equipment to "bog down" in a dust bowl? Frequently dust and dirt in the bearings are to blame—something you can easily prevent by lubricating with *Texaco Marfak*.

This world-famous chassis lubricant seals out dust and dirt, seals itself in the bearings, keeps wear at a minimum. And the protection is long-lasting because *Marfak's* tough film stays put even under heavy shock loads. As a result, your equipment stays on the job longer—production goes up.

For a wheel bearing lubricant that provides similar protection against dust and dirt . . . use *Texaco Marfak Heavy Duty 2*. It stays in the bearings and off the brakes. Furthermore, it's an all-season lubricant that permits re-

packing on an extended mileage basis.

Or you can use just one lubricant—*Texaco Marfak Heavy Duty Special 2*—for chassis, wheel bearing, water pump and other grease lubrication. This lithium-base lubricant stays put in the toughest service, resists water washout and pumps easily at low temperatures.

And to give all kinds of rolls maximum protection from rust and wear . . . use *Texaco Track Roll Lubricant*.

Why not find out exactly how few Texaco products can keep your equipment performing efficiently in any area, under all conditions? Call the nearest of more than 2,000 Texaco Distributing Plants in the 48 States or write The Texas Company, 135 East 42nd St., New York 17, N. Y.



**TEXACO** Lubricants and Fuels  
FOR ALL CONTRACTORS' EQUIPMENT

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# INDUSTRY NEWS

## Lime reclamation plant



DAYTON, OHIO's new \$1.5 million lime calcining plant is expected to be ready for operation this fall. Consisting principally of a 9 x 265-ft. calcining kiln, the plant will reclaim lime added to city's water for softening purposes and also will extract the water's natural lime content. Surplus lime may be sold. Loyd Huffman, shown standing at the end of the kiln, is city water director of Dayton. His assistant, William Eiffert, said they believe the plant will save the city about \$200,000 per year.

## Phosphate ore reserves explored by Stauffer

SAN FRANCISCO CHEMICAL CO., Montpelier, Idaho, has conducted exploration work for Stauffer Chemical Co. at the latter's Hot Springs, Idaho, phosphate rock property and has indicated that a multimillion ton ore body exists. There is said to be available at least a million tons of easily minable, high grade phosphate rock that can be used for economic manufacture of superphosphates. Lower grade phosphate shales also are available on the property.

The company does not plan immediate work on this ore body, which provides substantial additional reserves for future use. Stauffer Chemical Co. has major superphosphate operations at Tacoma, Wash., Rich-

mond and Vernon, Calif. It is also part owner of Western Phosphates, manufacturers of phosphate fertilizers, Garfield, Utah.

## Pavement yardage

AWARDS OF CONCRETE pavement for the month of May, 1957, and total awards for the first five months of the year were listed by the Portland Cement Association as follows:

	Sq. yd. awarded during:	
	May, 1957	First 5 Mos.
Roads .....	4,209,142	20,986,360
Streets and alleys .....	3,278,588	11,108,912
Airports .....	2,284,999	9,466,329
Totals .....	9,771,829	41,561,601

## S. E. mining conference to be held in Tampa

SOCIETY OF MINING ENGINEERS OF A.I.M.E. will hold its annual meeting in conjunction with the Southeastern States Mining Conference, scheduled October 15-18, 1957. Headquarters are the Hillsboro Hotel and Hotel Tampa Terrace, Tampa, Fla. Four days of technical sessions and field trips will be highlighted by a tour through the Bone valley phosphate mining field and processing centers.

Field trips are scheduled for October 17 and include visits to the Noralyn mine and flotation plant of International Minerals and Chemicals Corp., triple superphosphate plant of Davison Chemical Co., and to a phosphorus furnace operation. On October 18 a field trip is scheduled to Lehigh Portland Cement Co.'s plant at Bunnell, Fla., featuring mining for sea shells used in cement manufacture. Plans also are being made to visit a crushed stone plant.

## Dewey completes negotiations for New Mexico plant site

DEWEY PORTLAND CEMENT CO., Kansas City, Mo., has announced plans to erect a \$10 million cement plant near Albuquerque, N.M. Negotiations for a 2,000-acre site in the Placitas area, 17 miles from Albuquerque, have been completed and engineers are preparing the plant layout, which is expected to be ready late this month. Output of the proposed plant is anticipated at about 1,250,000 bbl. annually.

F. E. Tyler, founder and chairman of the board of directors of Dewey Portland Cement Co., indicated that his firm has been interested for some time in the Southwest. Dewey has other plants at Davenport, Iowa, and Dewey, Okla. With the New Mexico operation underway, it is estimated that its total output will reach 7,000,000 bbl. annually.

## West coast transaction

GLADDING-McBEAN & CO., Los Angeles, Calif., will purchase the fixed assets of Washington Brick & Lime Co., Spokane, Wash., if stockholders of the latter company approve the transaction. The new facilities will be operated as part of Gladding-McBean's Northwest division under the direction of Carlton E. Goudge, vice-president and general manager in Seattle, Washington.

Neal R. Fosseen, president of Washington Brick & Lime, will join Gladding-McBean in an overall divisional assignment. C. W. Planje is president of Gladding-McBean, which owns and operates a total of nine plants on the west coast.

## Sayre & Fisher chairman charts Aglite operation

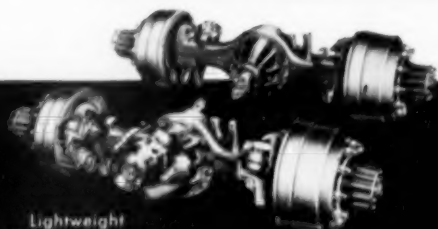
SAYRE & FISHER Co.'s Aglite Division, Sayreville, N.J., has begun operation this summer, and according to David S. Fischman, chairman of the board, "The demand for Aglite is so great that it may take an additional plant before we can fill the ordinary normal requests." The plant has a daily production capacity of 1,500 cu. yd.

In addition to producing the lightweight aggregate, Sayre & Fisher is negotiating to build Aglite plants under royalty and franchise for others. "Ag-lite is very important to us," said Mr. Fischman, "and we expect to make our process the standard in the industry."

(Continued on page 65)

For Today's Most Complete Line of Quality

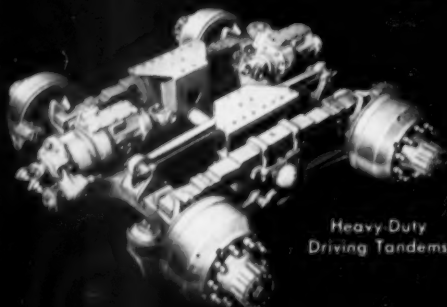
# SPECIFY... **TIMKEN-DETROIT**



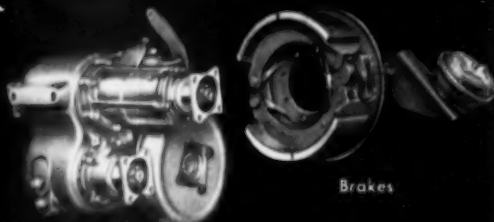
Lightweight  
Driving Tandems



Trailer Axles



Heavy-Duty  
Driving Tandems



Gear Boxes

Brakes



Single Driving Axles



Front Axles

Whether your requirements call for highway or off-the-road equipment—Timken-Detroit offers torture-tested axles and brakes proven by almost 50 years of field testing and laboratory research!

Timken-Detroit meets all your requirements for driving, trailer and front axles . . . brakes and gear boxes . . . with a complete range of capacities in each product category. Shown here are some of the units included in the complete line.

Nearly 50 years of manufacturing experience—plus continuing field and laboratory research—have taught Timken-Detroit the exacting needs of the trucking industry. Timken-Detroit Axles and Brakes are designed and built to give you the utmost in service, safety and dependability.

To you—this leadership in power transmission and braking systems means more productive road time, reduced operating costs and lower maintenance expense. Timken-Detroit Axles and Brakes are engineered to carry more payload . . . and stop more payload . . . at lower operating costs under all conditions.

The Timken-Detroit line of Medium and Heavy Duty Double-Reduction Tandems is an example of the superior engineering features and quality built into every Timken-Detroit product.

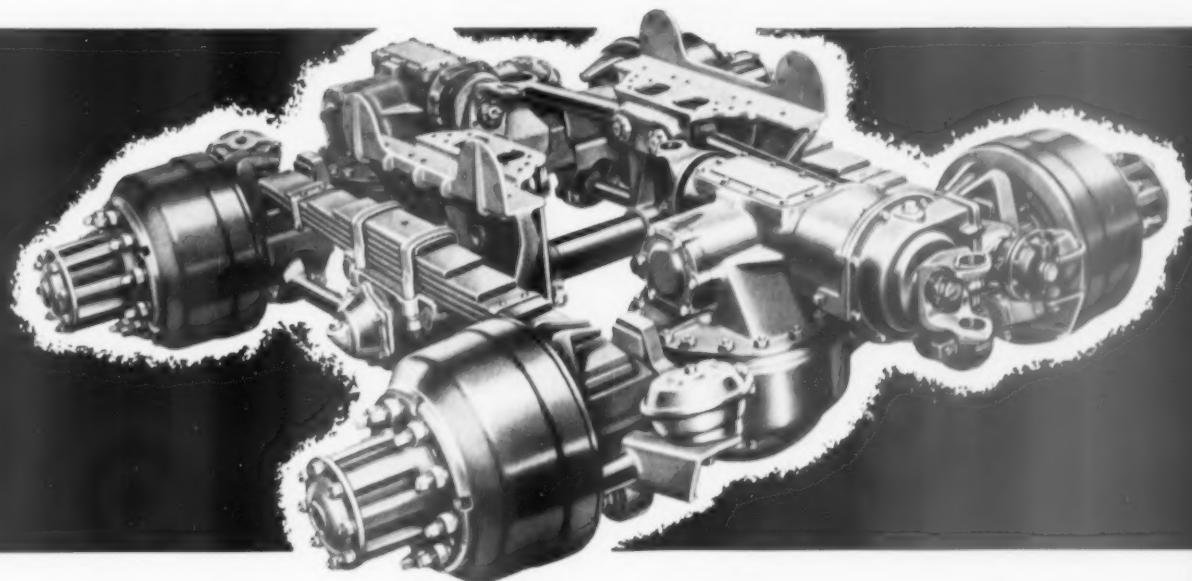
Plants at: Detroit, Michigan • Oshkosh, Wisconsin • Utica, New York  
Ashtrubala, Kenton and Newark, Ohio • New Castle, Pennsylvania



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*Axles and Brakes for Commercial Vehicles*

Products of **Rockwell Spring and Axle Co.**



**Timken-Detroit Heavy-Duty Double-Reduction Tandems  
Give You Payload Leadership!**

Ability to take the toughest going and still deliver the load on time has helped make these rugged tandems the number one choice with operators of heavy-duty vehicles. These tandems give you the big advantages of long trouble-free service, economical performance and utmost dependability.

Here are a few of the features developed in famous Timken-Detroit Tandem Drive Units—

**"Cradle Ride" Suspension**... free ends of long, resilient springs float in axle spring guide brackets. This permits axles to articulate freely, adjusting themselves to road irregularities. Floating springs cradle the vehicle, materially reducing road shock and eliminating source of vehicle flutter. "Cradle Ride" suspension

stabilizes the load, permits easy, restful driving... improves driver control and safety. Driving and braking forces are transmitted only through torque rods.

**Hypoid Gears** with their larger pinions and greater tooth contact give you outstanding performance, top efficiency and long life—plus lower maintenance costs.

**Inter-Axle Differential** divides torque evenly between axles... yet permits wheels of one axle to turn faster or slower than wheels of the other axle. This means both axles are always doing equal amounts of work. Driving parts and tires last longer. Controlled from the cab, differential can be locked out at any speed to give positive through drive.

**Rectangular Shaped Axle Housings** are forged from high carbon steel. This

rectangular shape, combined with full strength corner sections, provides the greatest strength possible with minimum weight and size.

**Famous Torsion Flow Axle Shafts** are made even stronger through the use of more splines and greater root and body diameter.

**Dependable Heavy Duty "P" Series Air Brakes** with unit-mounted design make a compact self-contained assembly. Temperatures are lower and liner life is longer because of open type spiders. Tapered "Econo-liners" provide greatest thickness in area of greatest wear.

**Unequaled parts interchangeability** gives you more time on the road—reduces parts inventory—speeds service. Parts are standard items readily available.

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**WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS, BUSES AND TRAILERS**

**A SPACE-SAVING, READY-TO-GO**

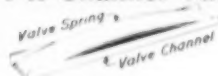


# 125 hp

## TWO-STAGE AIR-COOLED

### MOTORCOMPRESSOR

- Easy to install
- No water jackets or piping
- No freezing problem
- Air cooled intercooler
- Constant speed or dual control
- I-R Channel Valves

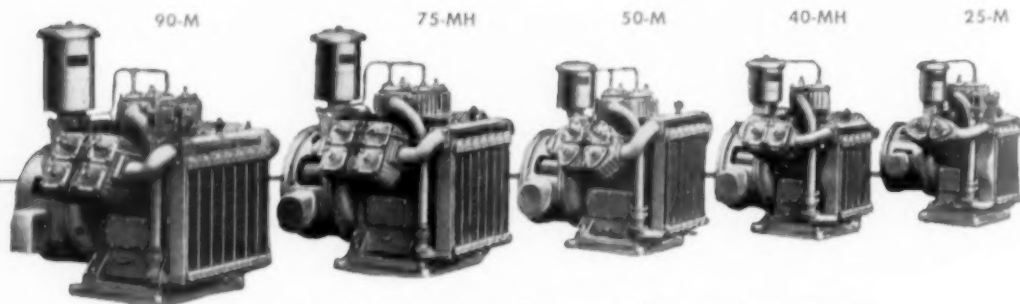


High Efficiency  
Quiet Operating  
Exceptional Durability  
Entirely Different  
Stainless-steel Channels and Springs  
Air-cushioned action  
Found only on I-R compressors

Newest addition to the Ingersoll-Rand line of Type 40 compressors, this heavy-duty, air-cooled unit offers new convenience and economy for the generation of 80-125 psi air power in the 125 hp class. Shipped fully assembled, its compact, well-balanced design and small foundation requirements cut installation costs. And efficient two-stage compression with intercooling to near ambient temperature, reduces power costs all year around.

Choice of constant-speed control, automatic start-and-stop control and manual or automatic dual control affords the most efficient capacity regulation for your particular operating requirements.

For complete information on all the time-saving, cost-saving features of this 125-hp Motorcompressor, send today for your copy of Bulletin 3188.



These sizes complete the Type 40 range of air-cooled compressors

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F-403

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COMPRESSORS • GAS AND DIESEL ENGINES  
ROCK DRILLS • PUMPS  
TURBO-BLOWERS • AIR AND ELECTRIC TOOLS



## INDUSTRY NEWS

(Continued from page 61)

### Gift to promote aggregate research

MARBLE CLIFF QUARRIES Co., Columbus, Ohio, has established a professorship in Ohio State University's department of engineering. Under terms of the \$5,000 grant, a faculty member will share his time between teaching and research on uses of natural aggregates in construction. John S. Kaufman, chairman of the board of directors of Marble Cliff Quarries, presented the gift to Kenyon S. Campbell, associate executive director of the university's development fund, and Dean Gordon B. Carson of the college of engineering at Ohio State.

### U. S. Lime to build new fluxstone plant

UNITED STATES LIME PRODUCTS Corp., Los Angeles, Calif., subsidiary of Flintkote Co., began construction in June of a new plant on its property at Arrowlime, Nev. for production of fluxstone. L. J. Harvey, Jr., chairman of the board of Flintkote Co., announced plans for the plant, which will have an output capacity above 400 tpd. He said that much of the production will go to Kaiser Steel Corp.'s Fontana, Calif., plant for use in Kaiser's new oxygen steel-making furnaces, now under construction.

### Reissue vermiculite booklet

VERMICULITE INSTITUTE, 208 South LaSalle St., Chicago 4, Ill., has revised "Vermiculite Loose-Fill Building Insulation." Reference to a new federal specification HH-1-585 covering vermiculite is included. Copies of the booklet are available from the institute on request.

The requirement by FHA and other federal agencies of a vapor barrier below fill insulations in attic spaces has been withdrawn when vermiculite is used. Where the space is properly ventilated, no vapor barrier is needed.

### Company changes owners

BATTLE CREEK GRAVEL Co., Battle Creek, Mich., has been purchased by Julian M. Kinzie, Gull Lake, Mich., who assumed control of the company June 3. Don I. Battjes, former managing partner of the Battle Creek Co., is now devoting his full time to the Grand Rapids Gravel Co., of which he is executive vice-president.

(Continued on page 68)

## Now ... get even bigger earning power with a **BANTAM!**



### ... greater stability at any working range!

Here is the new 8-ton BANTAM with its specially engineered Model 300 crane carrier mounting—offering you increased working capacity, *with or without* outriggers, at normal working radii (15' ... 20' ... 25') to handle your sand, gravel and other jobs faster, at lower costs.

BANTAM's job-matched performance between carrier and basic machine gives you more lifting capacity per pound of weight than any other rig in its size class! BANTAM engineering know-how, based on more than 8000 machines in the field, is your assurance of a rig to handle your heaviest work without sacrificing mobility and maneuverability because of excessive "dead" weight.

Here is real heavy-duty performance with easy-traveling mobility for all your jobs—excavating and loading materials ... truck loading and stockpiling, etc. Your BANTAM gives you a wider work range—with a complete line of BANTAM-built attachments for ditching and basement work and many more extra-profit assignments.

CLIP ... AND MAIL NOW!



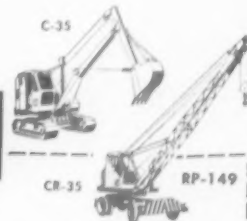
**SCHILD**  
**Bantam Co.**

216 Park Street, Waverly, Iowa, U.S.A.

- Send information on:
- ☐ new 8-ton BANTAM
  - ☐ other carrier mounted BANTAMS
  - ☐ crawler mounted BANTAM
  - ☐ self-propelled BANTAM

Name \_\_\_\_\_  
Title \_\_\_\_\_  
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**WORLD'S LARGEST PRODUCER OF TRUCK CRANES AND EXCAVATORS**



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# NEW RINGBLASTER

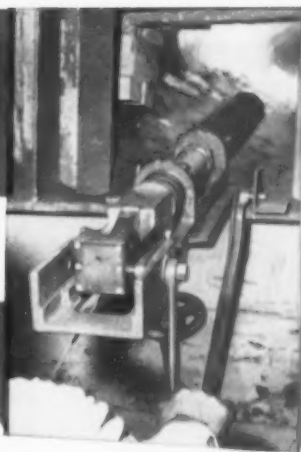


## **WESTERN INDUSTRIAL SHELLS** FOR MORE ACCURACY AND SMASHING POWER

Super X ammunition adds 10% to Ringblaster accuracy . . . Super X shells are specially powered to fit the more rugged Ringblaster features. Slugs hit with more impact . . . provide more dislodging

action. Cup-wad sealing confines release of full power behind slug . . . gives it more knockdown power. Slugs are special alloy to concentrate smashing power and to resist fragmentation.

# KILN GUN



## **Ready now—the newest development in Kiln Guns**

**Ringblaster MK-I, manufactured by Winchester-Western, is new from action to safety!**

Breaks out clinker rings quicker than ever... cuts down-time losses to a new low. The only kiln gun factory-equipped with a muffler—an exclusive feature which reduces operator fatigue.

This gun is the fastest, and safest way to remove clinker rings and other obstructions from rotary kilns.

**EXCLUSIVE NEW MUFFLER\***— Compact! Proved in sound tests! Cuts firing noise to an amazingly low level. So compact it won't block kiln doors or impair aim.

**NEW Rapid-Fire Martini action** features short stroke actuating lever. Now you can pump out shots at "pom-pom" speed.

**NEW Barrel is two inches longer**, with a wall 75% thicker. The heaviest and safest barrel mounted on any kiln gun.

**NEW**— Stronger recoil and rebound springs absorb shock better... reduce recoil, help maintain bull's-eye accuracy. All recoiling parts are now enclosed for operator protection.

Fire this good-looking kiln gun. Convince yourself of Ringblaster's fast, smooth action. See how much quicker you can pulverize clinker rings... and do it safely!

Write for details.

\*Patent pending

## **Ramset® Fastening System**

WINCHESTER WESTERN DIVISION  
OLIN MATHIESON CHEMICAL CORPORATION  
12177-H Berea Road • Cleveland 11, Ohio

## You can't set your sights too high

For digging . . . for handling material . . . for any clamshell work—OWEN Buckets perform giant size jobs day in and day out. OWEN'S designing and engineering experience, gained through 50 years of manufacturing Clamshell Buckets exclusively, has developed a product that is guaranteed to out-perform any other make. Remember—the bucket is the working end of the boom and it is of the utmost importance that there is absolute assurance the bucket will do the job.

This experienced "know-how" in design and engineering has contributed to the origination of the only independent line action Grapple to handle rock, scrap metal or pulpwood. The same unequaled quality construction in OWEN Clamshell Buckets is in OWEN Grapples.



OWEN Engineers are at your service any time at no cost to you. Send us your needs, stating exactly what are your requirements. We should have the answer that will "fit the bill to a T".

**The OWEN BUCKET Co.**  
BREAKWATER AVENUE, CLEVELAND 2, OHIO

BRANCHES: New York • Philadelphia • Chicago  
Berkeley, Calif. • Fort Lauderdale, Fla.



## INDUSTRY NEWS

(Continued from page 65)

### Seaway construction proceeds on schedule

SATISFACTORY PROGRESS is being made on canals and channels of the St. Lawrence Seaway, the national convention of the American Society of Civil Engineers was assured at its annual meeting in Buffalo, N.Y.

A paper prepared by William Grothaus, design engineer, St. Lawrence Seaway Development Corp., Massena, N.Y., and D. M. Ripley, senior hydraulic engineer, St. Lawrence Seaway Authority, Montreal, said that design of the seaway canals and channels is virtually complete and construction is well advanced in all sections.

"Much work remains to be done," they said, "to establish navigation aids and in chart compilation to make facilities fully useful to navigation. All this work will be completed in time, however, for the opening of the Seaway in the international section in 1958 for vessels of 14-ft. draft and the whole of the Seaway for 27-ft. navigation in early 1959."

### Sand, gravel firm expands

TORRANCE SAND AND GRAVEL PRODUCTS Co., Torrance, Calif., is opening another sand and gravel deposit in Corona, Calif. Charles Shepard and Tom Block, partners in the firm, also operate a feldspar mine and mill in Campo, Calif., mine and process pyrophyllite in Southern California and Utah, have uranium interests in Blanding, Utah. They are currently negotiating with the Canadian government to build a \$30-million pulp mill in Saskatchewan for processing of timber from a 12,000-acre site they leased.

### Increase capacity for aggregate production

GEORGIA LIGHTWEIGHT AGGREGATE Co., Atlanta, Ga., producers of Galite expanded shale aggregate, completed the installation of additional productive capacity at its Rockmart, Ga., plant. The expansion program comprised the installation of additional conveying systems, raw storage silo facilities and one additional 8 x 125-ft. rotary kiln with one additional 6 x 70-ft. rotary cooler.

The new facilities were placed in operation April 1, and constitute an approximate increase in productive capacity of 60 percent. Foundations and footings were provided during this expansion program for a fourth additional installation identical to that recently completed.

(Continued on page 72)





FOR HANDLING GRAVEL...



OR HANDLING ROCK... Get longer life with Hamilton Conveyor Belting because of its greater resistance to abrasion, shock and abuse.



Write today for more information and literature.



# HAMILTON RUBBER

MANUFACTURING CORPORATION • Trenton 3, N. J.

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ROCK PRODUCTS, August, 1957

69

REPORT on new shovel-crane standards:  
(one in a series)



# Getting more usable horsepower

**LINK-BELT SPEEDER machines have precision-made, heavier components to take this bonus engine power**

To get an accurate gauge of shovel-crane work potential, it's important to make your comparisons on the basis of usable horsepower rather than engine size. Why? Because size for size, a Link-Belt Speeder delivers *more usable power or line pull* than other machines powered by the same make and model engine. And greater usable horsepower is bonus power that pays off in easier digging, faster cycles, more production and profits.

The variation in the amount of power a given engine actually makes available in the form of line pull (or power at the drums) is determined primarily by

the net horsepower the engine delivers at the output shaft. Engine Model X, for example, when run at 1200 rpm, delivers 75 hp. At 1600 rpm the same engine develops 100 hp!

#### **What permits greater horsepower**

Because the Link-Belt Speeder line is the industry's most advanced in design—17 new models—it incorporates the latest development in engineering, metallurgy and fabricating. As a result, every Link-Belt Speeder is an "extra strength" machine—a shovel-crane with the added guts and stamina to take full advantage of the bonus horse-

power available in each engine . . . at operating speeds well within the engine manufacturers' recommendations.

#### **Only part of the story . . .**

More usable horsepower is but one of many reasons why Link-Belt Speeder machines are completely revising existing profit and production standards. Why not see how you, too, can take advantage of Link-Belt Speeder "years ahead design" . . . earn a bigger return on your shovel-crane dollars. Contact your Link-Belt Speeder distributor for details or write Link-Belt Speeder Corp., Cedar Rapids, Iowa.

14-325



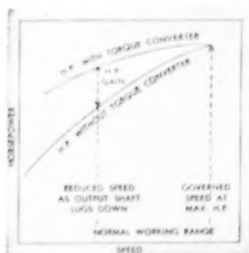
### 3-point check on usable horsepower

Check the engine manufacturer's "specs" to see what power the engine develops at various speeds. Check the shovel-crane manufacturer's "specs" to see at what speed the engine will be set. Then check the shovel-crane itself, see if shafts, clutches, gears and other components have the size and strength to take full advantage of bonus engine power. You'll have another reason why Link-Belt Speeder is today's top shovel-crane line.

### Power hydraulic controls for speed with safety

Speed-o-Matic power hydraulic controls utilize oil under pressure (maintained by an engine-driven pump and variable pressure valves) to actuate clutches. Response is fast, smooth and positive. There's perfect feel of the load under all conditions . . . none of the customary jerk, jump or lag found with air or mechanical controls.

# from shovel-crane engines.....



### For even more effective use of power

The horsepower gain charted at left is yours with a Link-Belt Speeder equipped with a matched engine torque converter package. Available for all models, torque converters cut digging shock, reduce fuel consumption, match power to the load and reduce engine stalls.

### Less chance for end-of-the-shift letdown

Because oil under pressure does all the work, the operator merely needs to flick short-throw levers. He stays fresh and alert, is actually encouraged to push the machine to its high limit all shift long.



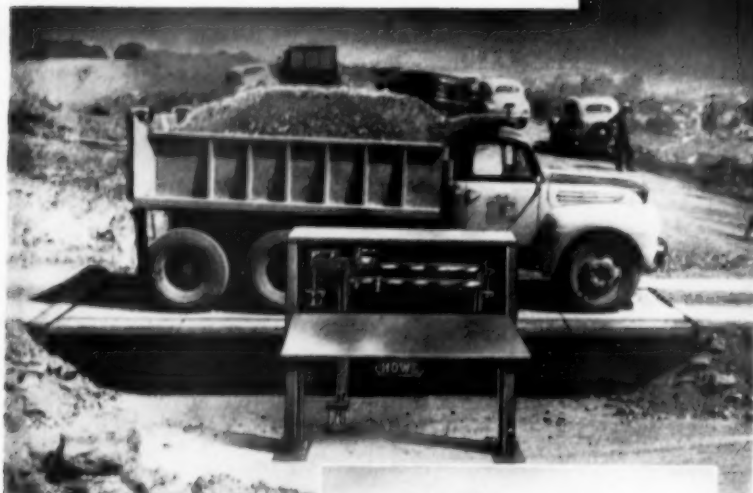
It's time to compare . . . with

# LINK-BELT SPEEDER

Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls

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## Portable VEHICLE SCALES



### weigh anything ...anywhere!

Here's the perfect portable vehicle scale . . . rugged, self-contained, easy to install and move, no pit required . . . accurate!

Capacities from 20 to 70 tons—lengths from 20 to 60 feet. Individual sections can be joined with just 8 bolts for greater length and capacity.

And you can select any weight indication—full capacity beam, type recording beam for printed records, or attachable Weightograph® for direct enlarged visual readings.

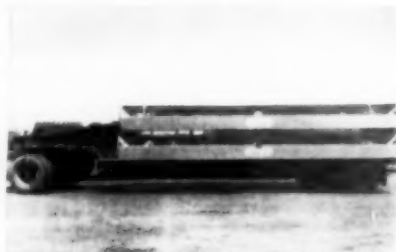
All this plus the extra ingredient—a solid century of scale skill built into every Howe Scale. Don't settle for less.

#### PORTABLE VEHICLE SCALE FOLDER

Write today for this folder giving complete details and specifications on Howe Portable Vehicle Scales.



Each section a complete scale—easily joined for greater length and capacity.



Standard 8' frames can be moved without exceeding legal load limits.



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The **HOWE SCALE Co.**

A SUBSIDIARY OF SAFETY INDUSTRIES, INC.

RUTLAND • VERMONT

## INDUSTRY NEWS

(Continued from page 68)

### Record phosphate shipment

INTERNATIONAL MINERALS AND CHEMICAL CORP., Chicago, Ill., recently carried out an experiment in large-scale movement of phosphate by shipping 11,500 tons of triple super-phosphate from Tampa, Fla., to New Orleans. The phosphate was loaded aboard the liner S. S. Edith from the Seaboard railroad terminal on Sedden Island in the Port of Tampa. It had been transported by the Seaboard railroad from the IMCC plant at Bonnie, Fla., and was destined for delivery by barge from New Orleans for Minneapolis, St. Paul, St. Louis and Peoria to meet peak requirements for plant food products in the Midwest.

### Effects recapitalization

DEWEY PORTLAND CEMENT CO., Kansas City, Mo., has effected the recapitalization program which was approved by its shareholders last August. A new class of nonvoting stock has been created and a wider distribution of shares obtained. The transaction gives holders three shares of stock (one voting and two nonvoting shares), each with a par of \$7.50 a share, for each share of \$15 par value common stock formerly held.

The plan was delayed because the law in West Virginia, where the corporation was chartered, held it unconstitutional to limit the voting rights of a stockholder. The company then organized a Delaware corporation and effected a merger in which all of the West Virginia company capital was transferred to the Delaware company.

Capital now is \$13,379,152, represented by 1,189,260 shares of nonvoting Class A common and 594,627 shares of class B voting common.

### Cement silo work proceeds at Rochester

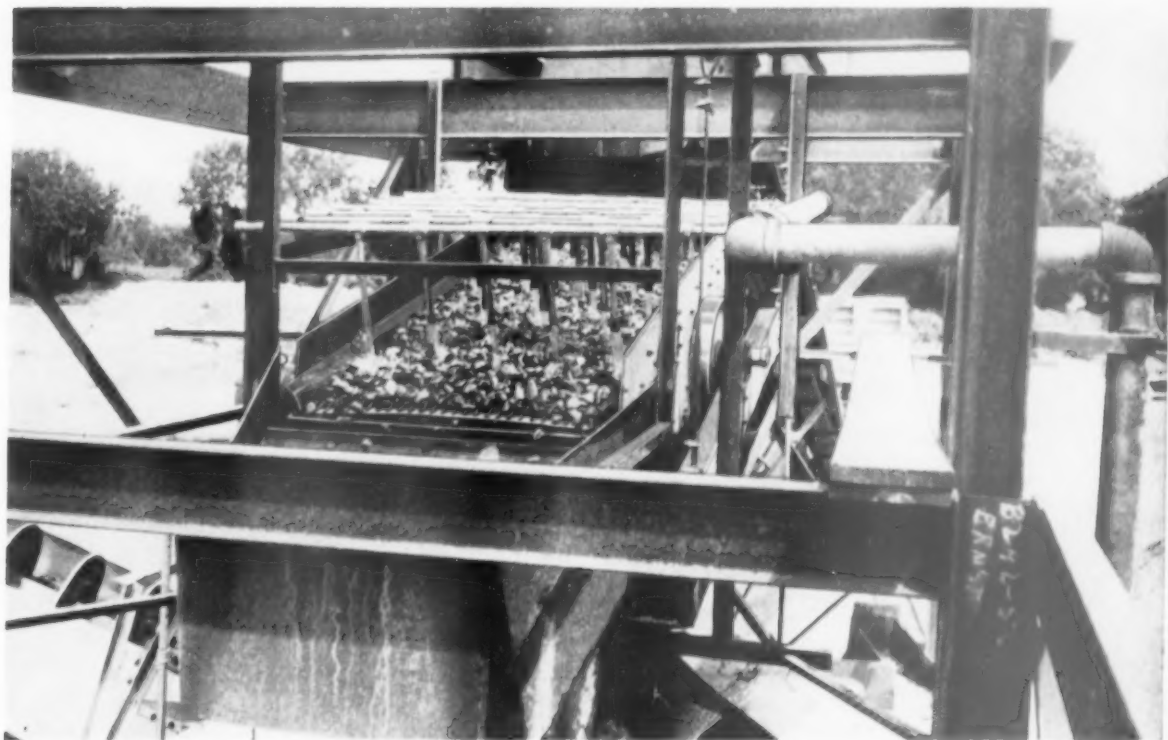
ROCHESTER PORTLAND CEMENT CO., Rochester, N. Y., expects to finish in September work on four concrete silos, which it is erecting on the west bank of the Genesee River. Silos will be used to store bulk cement. Total capacity of the four silos will be 100,000 bbl. Dimensions of each are 38 ft. diam. x 110 ft. high.

Rochester Portland Cement Co. plans to import and distribute more than 200,000 tons of cement annually from its parent company, Lake Ontario Portland Cement Co., Picton, Ontario, Canada.

(Continued on page 78)



# OPERATOR MEETS SPECS. FOR N.Y. STATE THRUWAY WITH SECO



Photographed on the job, Irving, N.Y.

## EVANS BUILDERS SUPPLY SAYS "BEST SCREENS WE EVER HAD"

Pictured above is one of the two SECO screens on-the-job at the high production sand and gravel plant of Evans Builders Supply Company at Irving, New York.

This rugged SECO double deck scalper in company with a 3 x 10 four deck SECO have produced approximately 280,000 tons of aggregates to date to meet the strict specs. of New York State Highway Dept. for use in construction of Thruway sections and sections of Routes 5 and 60. Not only have these SECO screens produced high tonnages, but equally important, they've done it with high accuracy and with no maintenance or down time for repairs. In the words of Mr. Samuel Catalino, owner of Evans Builders Supply, "SECO screens are the best screens we've ever used. They are 100% satisfactory in every way."

SEND FOR SECO CATALOG No. 204 TODAY

**SECO**  
TRUE CIRCULAR ACTION  
VIBRATING SCREENS

**NORTH, EAST, SOUTH AND WEST  
OPERATORS ACCLAIM SECO  
PERFORMANCE**

Planning a new plant or modernizing your present facilities for greater production at lower cost per ton? Write, wire or phone SECO. Get the extra performance benefits that make SECO screens preferred coast-to-coast.

**SCREEN EQUIPMENT CO., INC.**  
Buffalo 25, N.Y.

*Manufacturers of Vibrating Screens  
Exclusively*

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Michigan Model 175A loads crushed stone into stationary hopper at end of 480-ft conveyor leading to concrete batch plant.

## **6,750 cu ft of concrete per hour, *from automatic batching system fed by Michigan Tractor Shovels,* paces Peter Kiewit paving crew**

Peter Kiewit Sons' Company, Omaha, started construction of the new Minot (North Dakota) Air Force Base as originally planned for jet interceptors. But when the Air Force decided to base B-52-type heavy bombers there as well, a longer, wider, stronger runway became a sudden necessity. Modified plans doubled width to 300 ft, extended length well beyond the original 8100 ft. Key installation was a 50 ft ribbon of concrete, 16 inches deep, centered along the full length of the runway. To finish the greatly enlarged contract ahead of penalty date,

concrete pours had to average 2,000 cubic yards per 8-hour day.

### **Kiewit owns 16 Michigans, two used here**

Faced with this tight schedule, the Kiewit crew turned to an automatic concrete batching plant and modern high-speed material feeding methods. According to R. D. Wilson, Kiewit Area Manager, the entire paving



operation was planned around the known productive ability of Michigan Tractor Shovels. Two of Kiewit's 16 Michigans, both big Model 175As, were brought in to feed the batching plant via mobile and stationary hoppers and automatic conveyors. Handling 3,200 tons of aggregate per day, these 2 3/4 yard Michigans had to deliver heaped buckets every time—and they did! Their big loads, delivered fast, kept plant at peak production of 180 batches (each 37.4 cu ft) per hour, day after day . . . making the job possible—and profitable!

### Michigans eliminate pulverizing problem

One of the major advantages of the Michigans was that, despite their speed, the big low-pressure tires compacted—but never pulverized—the stone underfoot. Thus Kiewit eliminated a major problem—the crushing and grinding of aggregates often experienced when crawlers are used. Trucks delivering the stone dumped at the edge of the air field; there the Michigans took over. These fast, highly-maneuverable units loaded the material, carried it up steep ramps to build and maintain huge stockpiles.

### "Fast, dependable, easy to repair"

"Another reason we put Michigans on the job was we knew they require very little maintenance," says Paving Supt Max Woodard. "When repairs are necessary, excellent accessibility makes it an easy job. We've also found these machines have enough power to do anything we want. They're fast, too. Our operators like the way they handle. We like the way they kept those hoppers full. Fuel? One tank of diesel oil (50 gallons) keeps them going all day long! That torque converter's good and the power-shift transmission is a big improvement over other machines. Michigans have done a nice job for us."

### Make this test

Chances are, Michigans can do a "nice job" for you, too, no matter what bulk materials you have to move. But there's an easy way to find out first hand! Simply ask your Michigan Distributor for a free demonstration—no obligation, of course. If what you see looks good enough to buy—and we think it will—your distributor has a wide range of purchase plans . . . including Clark's popular Lease-Purchase which lets you put one or more Michigans to work without spending a cent of capital.

Normal carry position, slightly above ground level, eliminates possibility of stone-crushing dozing action; yet permits high-speed travel without spillage-loss.



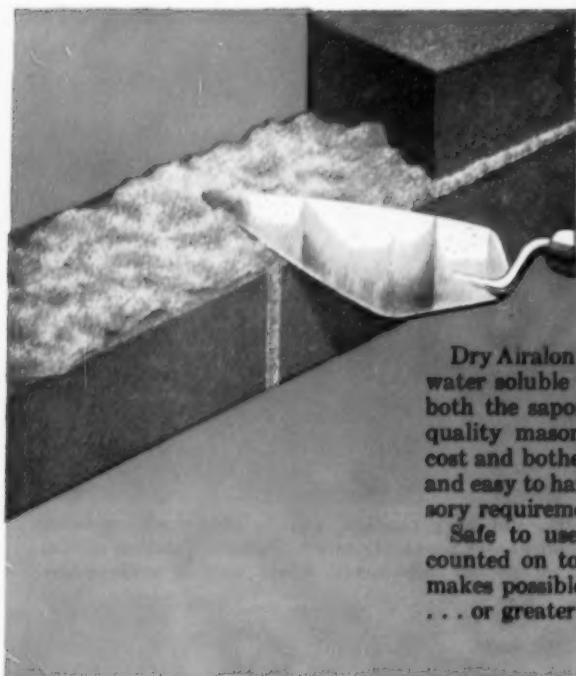
Clean design of bucket mechanism gives operator excellent visibility when dumping into hopper.



Another of Peter Kiewit's Michigans serves as all-around handyman on company's Indiana Turnpike contract. This 102 hp 2 yd Model 125A lifts up to 11,000 lbs, carries 5,500 lbs at 4 mph.

**CLARK®  
EQUIPMENT**

Michigan is a registered trademark of  
**CLARK EQUIPMENT COMPANY**  
Construction Machinery Division  
2481 Pipestone Road,  
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## FOR HIGH-QUALITY MASONRY CEMENT DRY AIRALON

Dry Airlon is a highly efficient mixture of resin and fatty acids in convenient, water soluble "dry-chip" form. It contains, in one ready-to-use compound, both the saponified resin acid and fatty acid required to manufacture high quality masonry cement. "Two-in-one" Dry Airlon thus eliminates the cost and bother of proportioning these two materials separately. Inexpensive and easy to handle, it further helps maintain cost control by reducing supervisory requirements as well as plasticizer costs.

Safe to use because it requires no causticization, Dry Airlon can be counted on to provide consistently uniform air entraining effectiveness. It makes possible greater plasticity and water retention at a given air content . . . or greater strengths at a given plasticity and water retention.

# CEMENT MILL

## MAKING RESEARCH PAY OFF FOR YOU

It's not by chance that Dewey and Almy cement mill products set the additions standard for quality and performance. Each product had its beginning in the world's finest privately-owned cement and concrete laboratories.

Since 1932 these laboratories have been the scene of untiring research. Here are probed many aspects of the chemistry of cement and concrete. Here it is possible to duplicate nearly every conceivable cement mill or construction situation. Thus, the research is *utterly practical*.

Our products—Airlon, TDA, MTDA and MRDA among them—are presented to the trade by field men whose knowledge and technical skill are among the best in the industry.

Cement mill production men rely on these products for uniform quality and for performance that matches specifications. Contractors and builders also value these products in their cement usage . . . further proof that research that begins in the laboratories pays off *on the job*.



**DEWEY AND ALMY**  
CHEMICAL COMPANY  
DIVISION OF W. R. GRACE & CO.



CAMBRIDGE 40, MASS. • MONTREAL 32, CANADA CHICAGO 38, ILL. • SAN LEANDRO, CALIF.







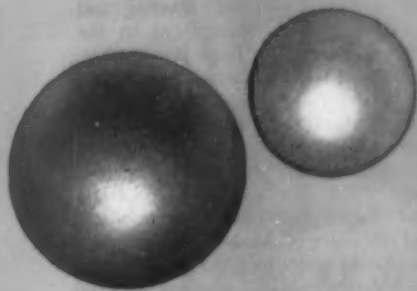
## **FOR LOW-COST AIR-ENTRAINING CEMENTS DRY AIRALON**

When low-cost air-entraining cements are the order of the day, Airalon is the answer. This multi-purpose compound, easily added as a solution or a dry compound, simplifies inventories, proportioning and handling. Dry Airalon is specially processed in coarse, chip-like form to eliminate hanging-up in feeder bins or hoppers, and permit easy proportioning by means of dry feeders. Dry Airalon "chips" are shipped in protective polyethylene-lined bags—double protection against warehouse caking.

Accepted by ASTM for use in making air-entraining cement in accordance with ASTM C-175, Dry Airalon requires no causticization.

# **STANDBYS**

## **FOR MAXIMUM GRINDING MILL OUTPUT TDA and MTDA**



TDA and MTDA, Dewey and Almy's twin cement mill products, normally increase mill output 10 to 50% (depending on fineness) even when grinding media are as clean as those pictured here. Where ball coating is encountered, TDA and MTDA furnish even greater grinding assistance.

Because hanging-up in the separators is reduced and dry dispersion improves separator efficiency, TDA and MTDA provide a supplementary increase in closed circuit grinding output.



# TODAY'S BUCKET IS THE KIESLER!

IT DIGS  
DEEPER  
IT DUMPS  
FASTER

LEVERAGE . . .  
WHERE IT REALLY COUNTS!

Years ago there was only one way to move freight cars — by brute force. Today there are power winches that do the job faster and easier. So it is with clam shell buckets: today your excavating or rehandling jobs can be done faster and with less effort . . . with a KIESLER bucket!

THAT THE KIESLER BUCKET DOES DIG DEEPER AND DUMP FASTER THAN ANY OTHER BUCKET IS NO IDLE CLAIM! Here are the facts: It digs deeper because the powerful leverage is applied through TWO lever arms with EQUAL force to BOTH shells. This digging force, unequalled by any other bucket, is achieved without unnecessary parts to the line, with less cable, and without extra dead weight.

The KIESLER bucket dumps faster because of the exclusive shell design which gives a more positive dumping angle the instant that the jaws start to open (not only when the jaws are wide open). Thus, the operator can eliminate spillage by spot dumping. This results in minimum handling costs and affords more time for additional work.

The KIESLER bucket with its rugged construction and powerful design has what it takes to produce the greatest yardage with less effort, and with a minimum in maintenance. Phone or write to learn first-hand how KIESLER can save you time, money and manpower on your excavating or rehandling jobs.

## GUARANTEE

Kiesler Buckets are guaranteed to outperform and do a bigger day's work than any other Bucket of equal weight, width and size, when properly reeved and operated.

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JOS. F.

**KIESLER** co.  
*Since 1892*

## INDUSTRY NEWS

(Continued from page 72)

### Find Ohio sources of expanded aggregate

OHIO STATE UNIVERSITY's engineering research team has found clay and shale deposits in 52 localities which show promise for production of expanded aggregate. The OSU experiment station said it would schedule a conference among representatives of aggregate manufacturers, railroads, equipment makers, construction engineers and others to explore the industry. There are already three large plants producing lightweight aggregate in the state of Ohio.

### Adds New Equipment

CASSIAR ASBESTOS CORP., Ltd., Toronto, Ont., Can., has added six Kenworth Model 802 trucks to equipment at its mine in northern British Columbia. The Cassiar mine is located 86 miles south of Watson Lake on the Alaska Highway, and is situated on a mountain at 6,500 ft. elevation. The end-dump trucks will haul ore from the open pit to the tramline and also will move waste on short hauls.

### Processing plant at quarry site

AMERICAN NEPHELINE LTD., Nipigon, Ont., Canada, now is operating a \$2.5 million plant for processing nepheline syenite ore adjacent to the quarry. Formerly, crude ore was sent to New York for processing.

Rock is quarried by the open cut method from the Blue Mountain deposit, about 125 miles northeast of Toronto. The quarry is operated on five levels to facilitate blasting and handling of ore. Equipment in the new mill includes a large jaw crusher, cone and roll crushers, screens and rotary dryer. Five dual magnetic separators remove magnetite particles from the 30-mesh material, and fine grinding is accomplished in pebble mills (200 and 270-mesh material) and "fluid energy" mill (micron size).

Five pairs of Link-Belt Flexmount oscillating conveyors, arranged in parallel, feed the highly abrasive material to the separators. Each pair is designed to handle 12 tons of ore per hour.

### Sand firm buys tug

NORTH STAR SAND & GRAVEL CO., Edmonds, Wash., has purchased the tug Arrow No. 3 from the Arrow Tug and Barge Co., Astoria, Ore.

(Continued on page 80)

Enter 1112 on Reader Card



*If  
it's  
Cyanamid,  
it's dependable!*

## *How many "Good-Will" Opportunities in a mile of turnpike?*

Every home...shop...school or hospital along your blasting route presents a special community relations problem. Each also represents another opportunity for "Good-Will" blasting techniques to help you do your work in a community with minimum disturbance to its business and family life. Cyanamid developed these shock-minimizing blasting methods and techniques as a result of many years of experience, and our engineers are always glad to help you put them into use. These procedures represent but one of the many extra services Cyanamid provides for its explosives customers.

Cyanamid plants and magazines are located for quick delivery directly to your operation. For highest-grade materials and further information about "Good-Will" techniques, call Cyanamid!

**CYANAMID**

**AMERICAN CYANAMID COMPANY  
EXPLOSIVES DEPARTMENT**

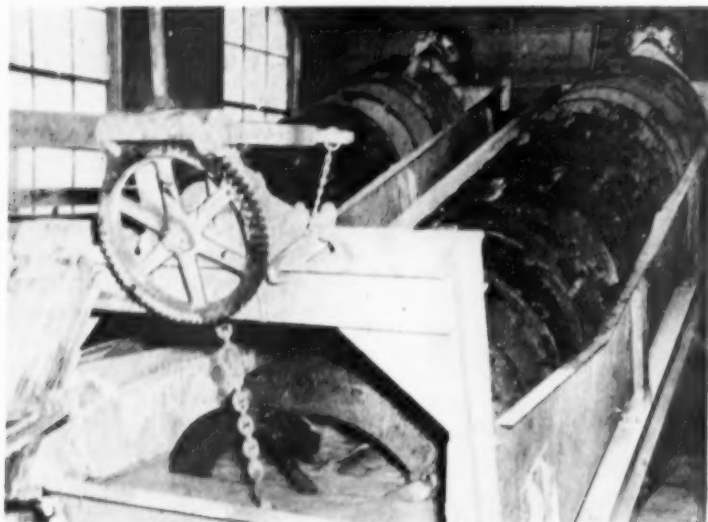
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Sales Offices: New York City, Latrobe, Pa., Pottsville, Pa.,  
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### **THE AMERICAN CYANAMID LINE:**

High Explosives	Electric Blasting Caps
Permissibles	Instantaneous
Blasting Agents	Regular Delay
Blasting Powder	Split-Second Delay
Blasting Caps	Blasting Accessories

# AKINS' efficient classification proved by 18 YEARS SERVICE at Deckers Creek Sand Co.



## TWO REPEAT ORDERS

The Deckers Creek Sand Co., near Masontown, West Virginia, is a prominent producer of silica sand. In 1938 they purchased three Akins Classifiers. Based upon the results obtained with these the company has since purchased four additional Akins.

## FLOWSHEET

Modern methods of washing, classifying, and rod-mill grinding are used. The crusher product goes to 48" Akins Classifiers which make a sand-slime separation. The sand product is fed to a 5'x10' Marcy Rod Mill, with the discharge going to vibrating screens which make a 30-mesh separation. The +30-mesh goes to aggregate plants and -30 mesh to a 54" Akins Classifier. The sands from this classifier are fed to a 48" Akins which makes the final product... 5% +30-mesh x 94% +80 mesh.

*For efficient classification, long operating life*

### SPECIFY AKINS

THE ORIGINAL SPIRAL CLASSIFIER

## COLORADO IRON WORKS CO.

P. O. Box 9041 • 3800 Race • Denver 16, Colorado

AKINS CLASSIFIERS • SKINNER ROASTERS • LOWDEN DRYERS

*Sales Agents and Licensed Manufacturers in Foreign Countries*

A SUBSIDIARY OF THE MINE & SMELTER SUPPLY CO.

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## INDUSTRY NEWS

*(Continued from page 78)*

### Perlite Design Manual

PERLITE INSTITUTE, 45 W. 45th St., New York 36, N.Y., has released the Perlite Design Manual, an 80-page volume containing all related specifications, data and detailed drawings for complete roof and floor systems, curtain wall back-up and other building sections. Bound in loose-leaf form, the manual is available from the institute or its members.

### Spanish Cement Statistics

PORTLAND AND SPECIAL CEMENTS produced in Spain during 1956 amounted to 4,133,333 tons, an increase of 248,000 tons, or six percent, over 1955. Four new plants and additions to three others resulted in an increased productive capacity of 418,000 tpy., but these were not brought into operation until late in the year. The country's program for the next four years anticipates an eventual increase in production of 2,000,000 tpy.

### Brazilian Cement Data

CEMENT PRODUCTION IN BRAZIL for the first eight months of 1956 reached 2,000,700 tons. Projecting this rate of production through December would give the country a total of 3,000,000 tons for the year. No cement was imported, as economists had predicted that Brazil was becoming self-sufficient in this area. The 1953 consumption figure of 2,988,122 tons of cement is the highest in Brazil's history.

### Film in demand

"FROM MOUNTAIN TO MAIN STREET," the public relations film telling the story of crushed stone as a vital ingredient in the Federal Highway Program, is proving exceptionally popular with members of National Crushed Stone Association.

Demand for the film, provided through the cooperation of New York Trap Rock Corp., has been so continuous that a second print has been added to the NCSA lending library. Member companies wishing to avail themselves of this 16-mm. color film to help the public in their areas have a better understanding of the crushed stone industry can schedule showings by contacting NCSA headquarters in Washington, D.C., or by writing to Community Relations Dept., New York Trap Rock Corp., 252 Water St., Newburgh, N.Y.

*(Continued on page 86)*



# AMERjet

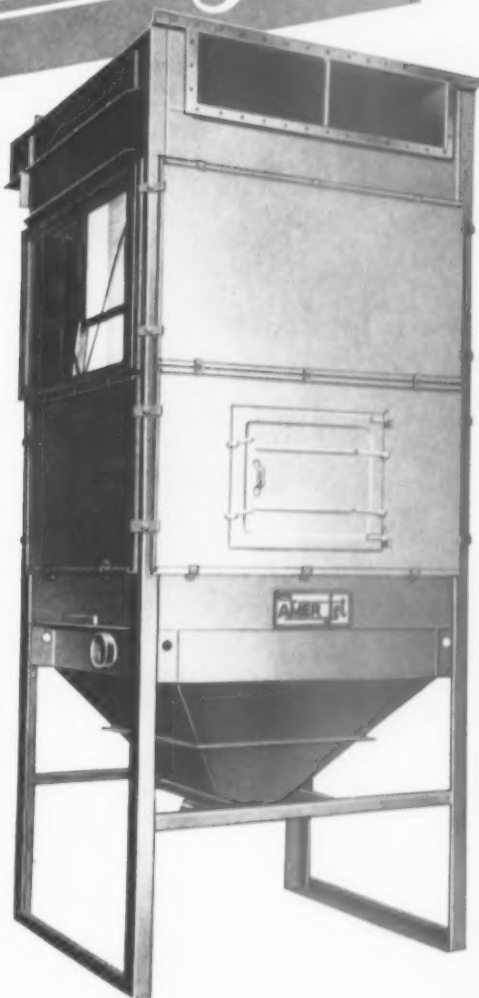
## KING of the FABRIC DUST COLLECTORS

Here's the world's No. 1 fabric arrester—designed specifically for collecting extremely fine dust particles and valuable material that should be collected in a dry state for reclaiming.

AMERjet's cleaning media is automatically and continuously conditioned by a reverse jet of high pressure air. This permits velocities through the cleaning tubes up to *five times higher* than is possible with ordinary fabric collectors.

In addition, AMERjet offers these big plus values:

- (1) Occupies  $\frac{1}{2}$  the space of conventional collectors.
- (2) Reduces installation cost by 50%.
- (3) Lowers maintenance costs by 45%.



FOR COMPLETE PRODUCT INFORMATION,  
WRITE FOR AMERJET BULLETIN 279.



**American Air Filter**  
COMPANY, INC.



107 Central Avenue, Louisville 8, Kentucky  
American Air Filter of Canada, Ltd., Montreal, P. Q.

AAF Dust  
Control Equipment



AAF Filters  
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BETTER AIR IS OUR BUSINESS

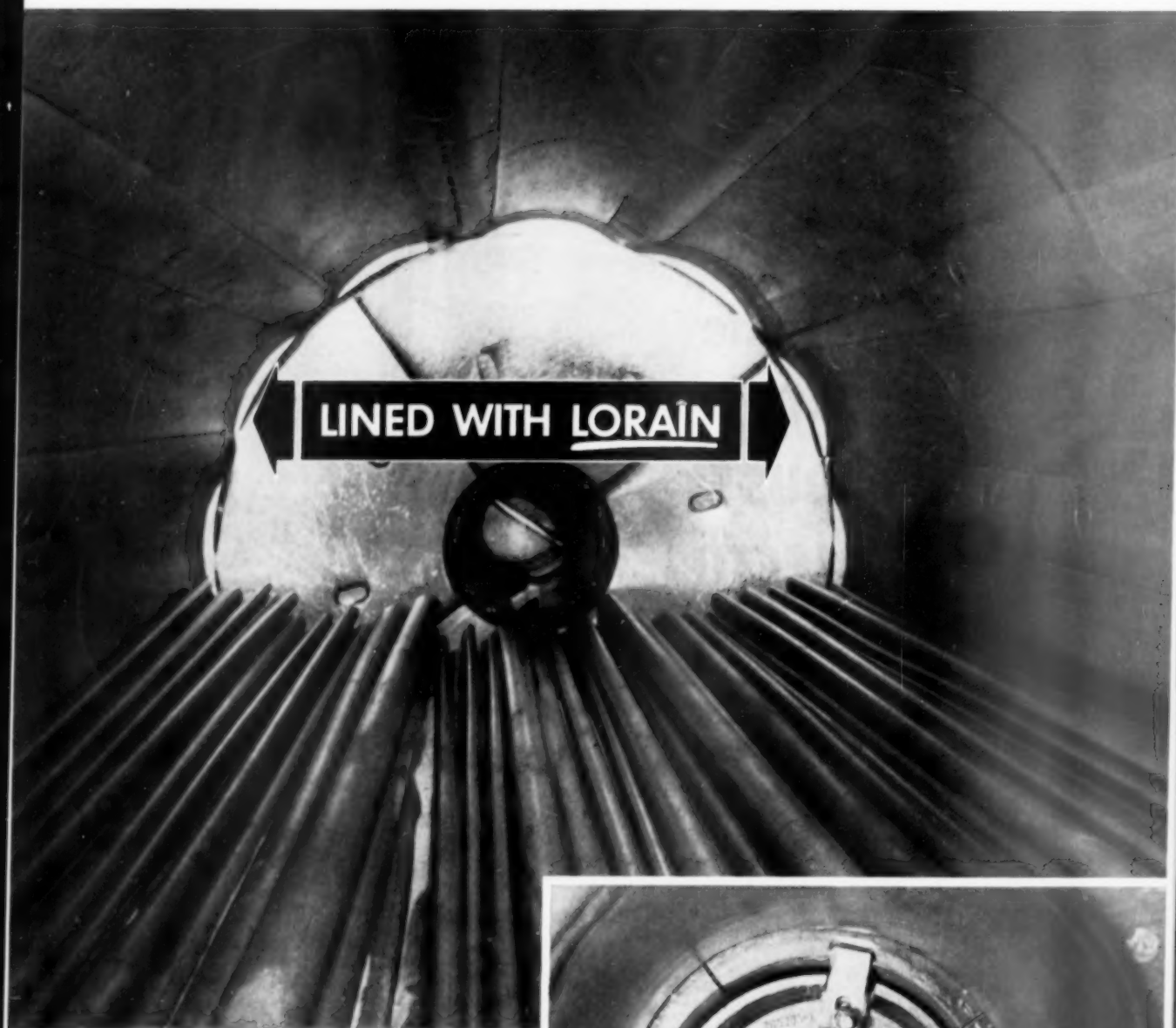
Cyclol Oil Bath  
Air Filters



Herman Nelson  
Unit Heaters

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# *Foote Mineral grinds*



**LINED WITH LORAIN**

**LINED WITH LORAIN.** This Marcy rod mill had ground 65,000 tons of spodumene ore when picture was taken. Notice snug fit of the Lorain Rolled Steel Plate Linings. Lift has been retained.

**THIS 5' x 12' MARCY ROD MILL** wet grinds spodumene, an ore so hard that a particle of it will **scratch glass!** The size of the ore input is  $\frac{3}{4}$ " x 35 mesh. Output is 20 mesh, or no particle larger than .018-inch diameter. The mill is lined with USS Lorain Rolled Steel Plate Linings.



# *hard spodumene ore...*

## **with USS Lorain Rolled Plate Linings**

Spodumene makes for tough grinding. In fact, a small particle of it is sharp enough to scratch glass—a feat usually reserved for diamonds. Spodumene-bearing pegmatite is a source of lithium, an element used in the manufacture of glass, ceramics, and greases. This hard ore can—and has—played hob with grinding-mill linings.

When Foote Mineral Company, King's Mt., N. C., put two 5' x 12' Marcy rod mills to work wet-grinding spodumene in 1953, USS Lorain Rolled Steel Plate Linings were used in one of the two mills. After ten months, the Lorain Linings had ground a record tonnage of spodumene and lasted 33% longer than the linings in the other rod mill.

An engineer at Foote Mineral Co. said: "Lorain liner costs have averaged substantially less per ton of ore ground than our former liners. We are particularly

pleased with Lorain Liners in that, after installation, we experienced no liner shifting or bolt breakage."

USS Lorain Plate Linings give this kind of performance because the steel is rolled to specifications that result in toughness, which allows the liner plates to wear paper-thin without failure. The lift bars are rolled from alloy steel for extra hardness that maintains lift and grinding efficiency for the life of the lining. Because Lorain Linings are tougher, thinner linings can be used—thus increasing mill capacities.

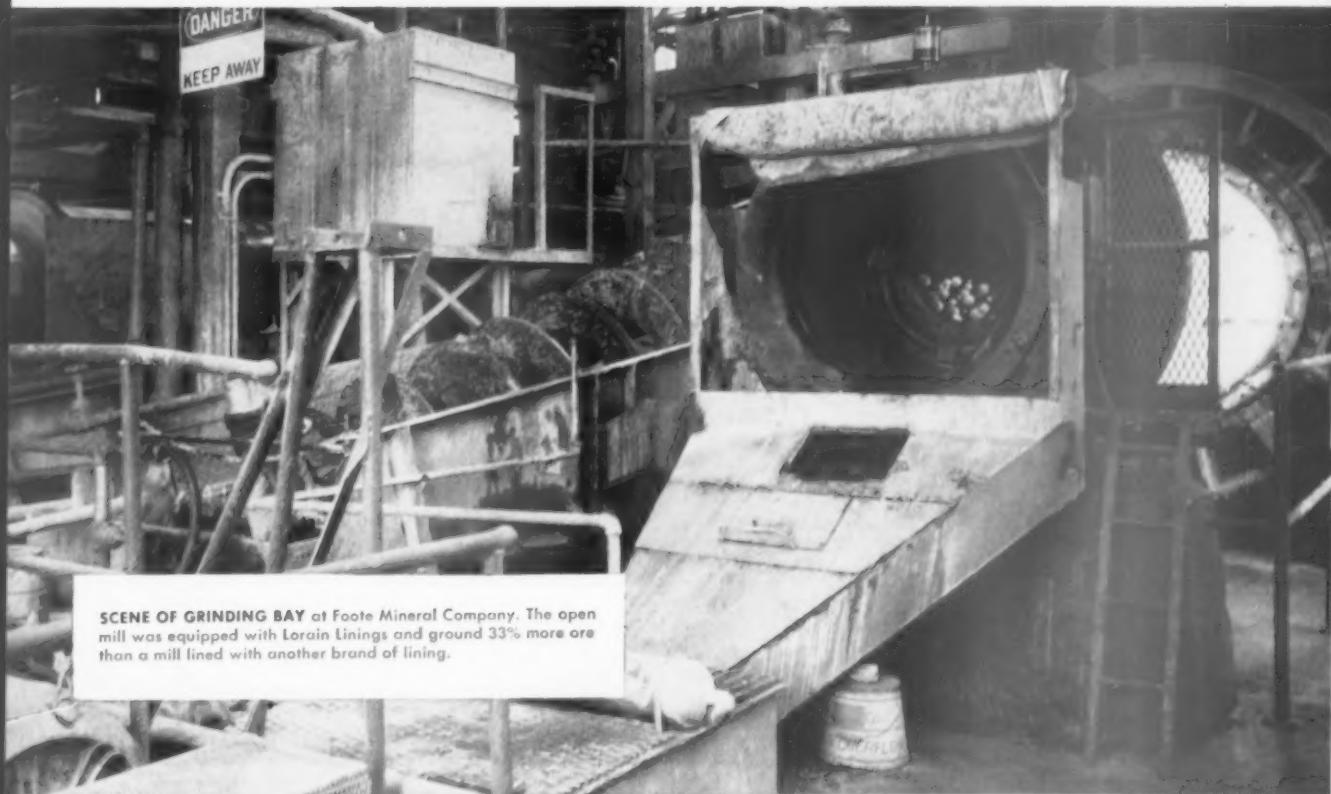
For close tolerances and snug fit, for long-lasting linings that mean lower-cost grinding, always specify USS Lorain Rolled Plate Linings. A note to Specialty Products Sales, United States Steel, 525 William Penn Place, Pittsburgh 30, Pa., will bring experienced engineering assistance on any grinding problem.

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.  
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

## **USS LORAIN ROLLED PLATE LININGS and USS GRINDING BALLS**



6-1085



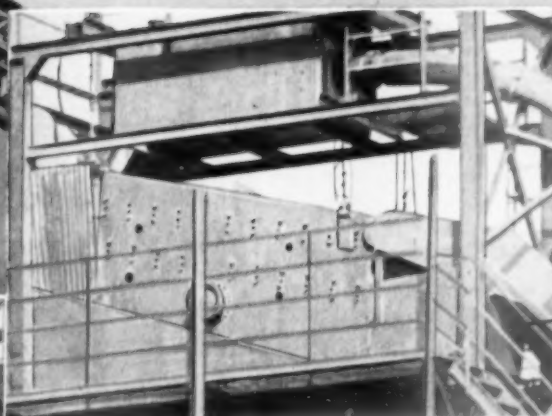
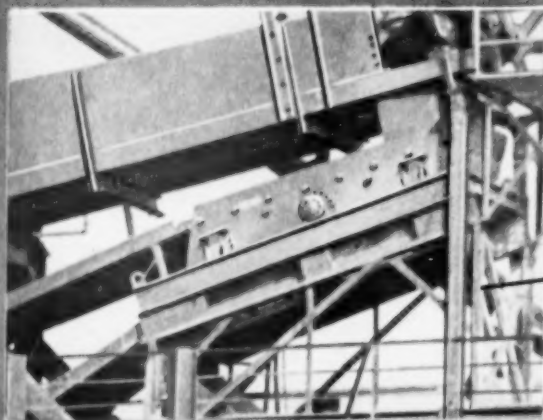
SCENE OF GRINDING BAY at Foote Mineral Company. The open mill was equipped with Lorain Linings and ground 33% more ore than a mill lined with another brand of lining.

UNITED STATES STEEL

# FAST, ACCURATE AND SIMPLICITY AGGREGATE



Material received by the pump box drops to the 4' x 12' Model M-11 Simpliflo triple deck screen. The top deck is equipped with 2" square openings. The oversize is chuted into a separate bin. Due to the nature of the deposit there is no need for a crusher, and what oversize accumulates is sold for fill uses. The second deck is equipped with a  $\frac{3}{4}$ " sq. opening. This deposit produces a large amount of pea gravel, and the excess which cannot be combined into concrete aggregates is chuted to another bin. All other materials between the first and third decks is passed onto the logwasher where it is thoroughly cleaned.



In the final phase of processing aggregates discharge from the logwasher onto a 4' x 8' Model 8G triple deck unit. Here the final rinsing and sizing takes place. The top deck,  $1\frac{1}{4}$ " sq. opening, splits the aggregate into two concrete specifications. The second deck openings are used to assist in making any unusual gradations, but primarily to lighten the load on the third deck where small opening screen cloth eliminates the broken soft stone, coal, and slate degradation. • Write today for Catalogs #531 and #571. • SIMPLICITY equipment can increase production in your plant.

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# PROFITABLE SIZING WITH SCREENS

**Production—125 tons/hour—with  
Simplicity equipment at one of the dredging operations of  
Boichot Concrete Products Corp., Lansing, Michigan—  
Louis and Donald Boichot, owners.**

Averaging 125 tons hourly—with production peaks as high as 150 t.p.h.—Simplicity screens produce accurately sized aggregates and washed sand at a large dredging operation of the Boichot Concrete Products Corp. of Lansing, Mich. The 8" pump, equipped with both a 10" intake and 10" discharge, delivers material 6" x 0 to a 4' x 12' M-11 triple deck screen. This unit scalps off the oversize stone, and screens all sand through a  $\frac{3}{16}$ " opening screen cloth. The sized aggregate is passed through a 30' long twin log-washer, where it is thoroughly cleaned. In turn the aggregate is discharged onto a 4' x 8' model BG triple deck screen for rinsing and final sizing. The

sand is flumed from the 4' x 12' screen to a 32' long electrically-operated purging tank, where initial

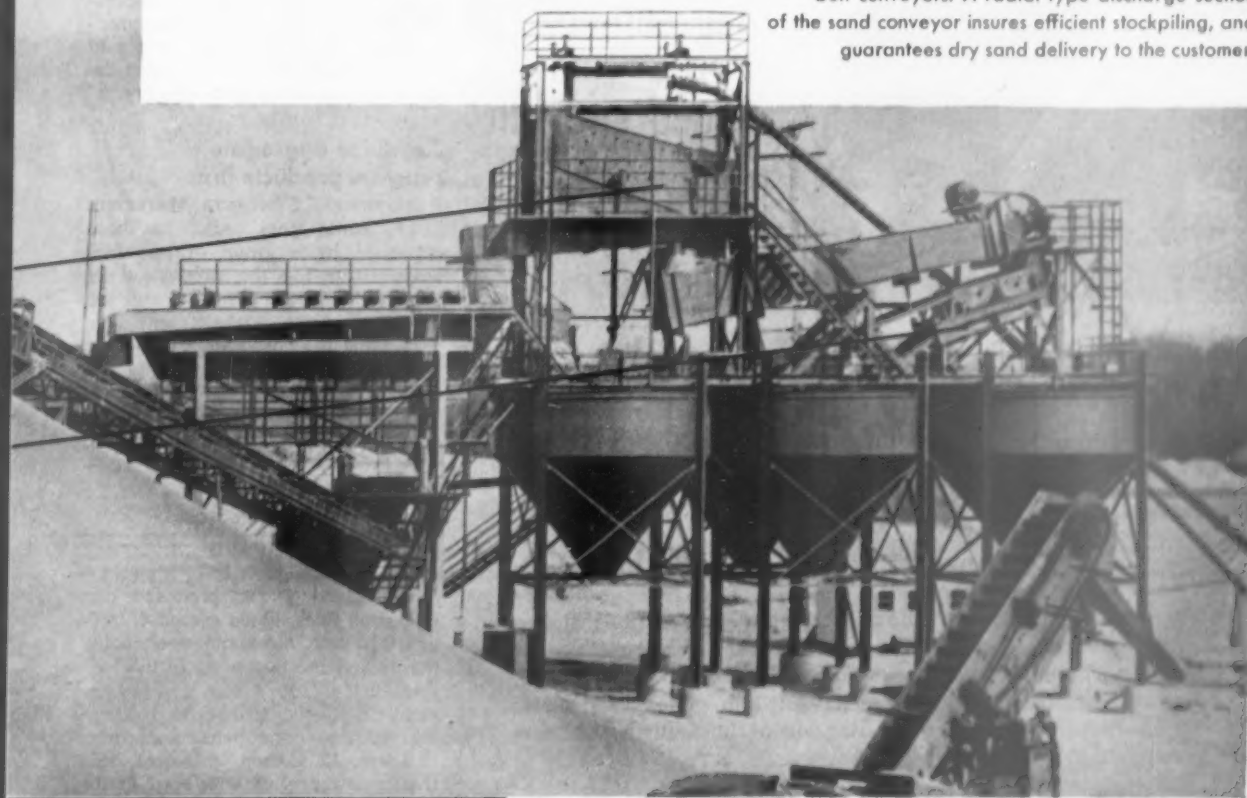
dewatering of sand occurs. Sand is then introduced into two sand screw classifiers

from the purging tank and passes to a stockpile via

belt conveyors. A radial-type discharge section

of the sand conveyor insures efficient stockpiling, and

guarantees dry sand delivery to the customer.



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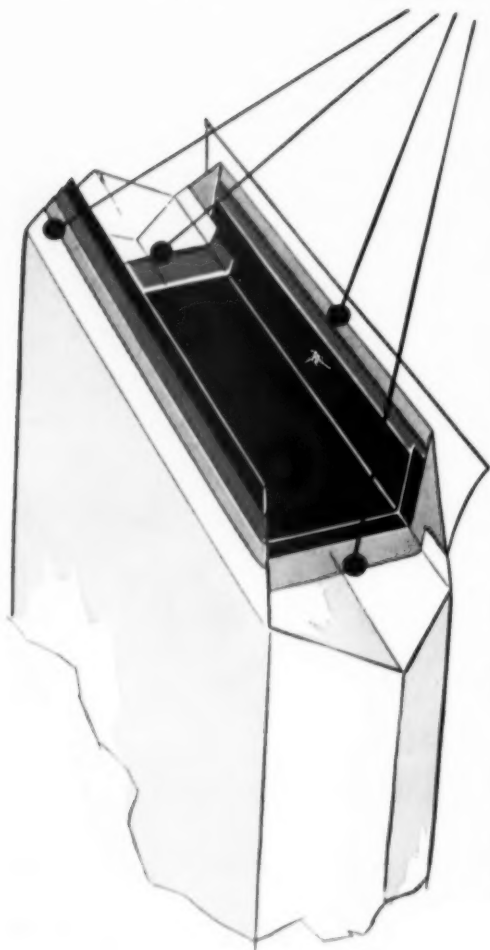
**FOR CANADA:** Simplicity Materials  
Handling Limited, Guelph, Ontario.  
**FOR EXPORT:** Brown and Sides,  
50 Church St., New York 7, N.Y.

Write for new Simplicity Screen Cloth  
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plicity's huge stock of fine quality cloth.



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to give you . . .

Excellent  
valve closure

No sifting at  
bag corners

Added strength

Easy  
handling

A very clean  
package

The Bemis design "steps" the plies in *four* places . . . not just two . . . to give the bag ends the *maximum* bond. Naturally, this provides the *maximum* siftproofness, cleanliness and strength. Bemis Standard Cement Bags have led in quality for years. Bemis Stepped-End Cement Bags lead the field in this new construction.

**Bemis is your best source for whatever type of cement bag you need**



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## INDUSTRY NEWS

(Continued from page 80)

### Increase quarry output by use of sixth shovel



CALAVERAS CEMENT Co., San Francisco, Calif., has placed a new Bucyrus-Erie 110B electric shovel in operation at its quarry at San Andreas, Calif. The 5-cu. yd. shovel, representing an investment of \$225,000, brings to six the number of shovels in operation there. E. M. Barker, vice-president in charge of production, said the equipment was added to meet demands of increased plant capacity.

### Organize aggregate, concrete products firm

SOUTHWEST CONCRETE MATERIALS CORP., Little Rock, Ark., has been organized by a group of Arkansas businessmen for the production of lightweight aggregate, sand, gravel and precast concrete products.

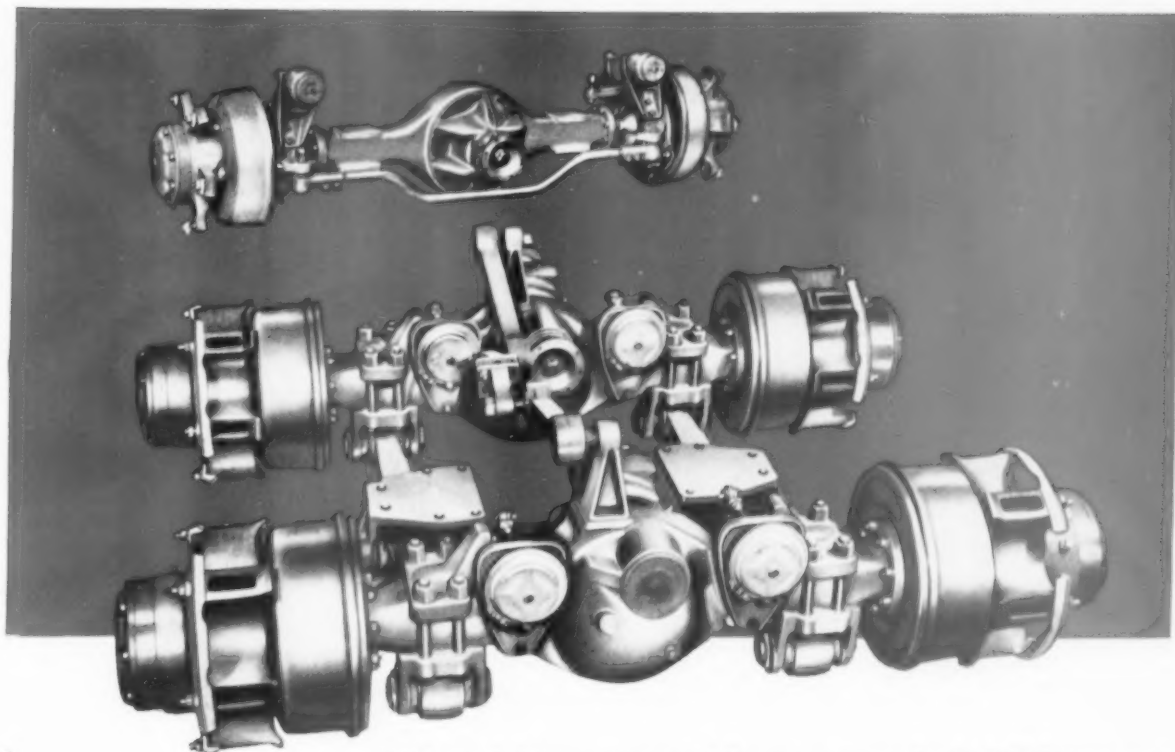
Heading the corporation is George Bickel, president. He formerly was engineer and sales manager of Featherlite Corp., Dallas, Texas, and also sales manager and engineer for Southwest Prestress Co., Dallas.

### Business prospects good, stockholders are told

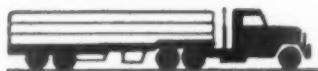
G. & W. H. CORSON, INC., Plymouth Meeting, Pa., predicted that its overall sales should exceed \$8 million this year. Stockholders attending the annual meeting were further advised that Corson's new masonry cement plant, scheduled for early opening, will incorporate latest features.

Bolton L. Corson, president, said that a new process developed in the company's laboratories extracts iron from fly ash. The new process, presently in production, "looks very promising," he said, and should result in a profitable line for the company. The company's concrete business in the first quarter was given special mention as having gone 20 percent over the 1956 period.

(Continued on page 90)



Meet the new Heavyweight Champ  
**CLARK Tandem Drive**  
 for 4 x 6 and 6 x 6 units with  
**TWO PLANETARY AXLES**



For greater strength and reduced weight—for minimum wear and maximum life—for virtual *elimination* of broken axle shafts and costly down-time—

- You've never seen the equal of Clark's new Tandem Drive with two planetary axles

See how this revolutionary design slashes costs, swells profits

- 70% torque reduction on shafts—Final reduction by means of the planetary drive in the wheels eliminates torsional wind-up in the shafts—practically puts an end to the common broken-shaft nuisance.

- Smaller size, increased strength—substantial reduction in size of shafts and other components with no sacrifice of structural strength—less weight, longer life because of lower torque load.

Take this simple step toward a long and profitable friendship—send the coupon for full information.

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 Please send illustrated bulletin on the Clark Planetary Axle.

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**No Limit to Usefulness.**





# ... at El Paso Sand Products Co.

THESE OWNERS ARE WELL PLEASED with the great versatility and performance they are getting from the Model HU "PAYLOADER" tractor-shovel at this sand and gravel and ready-mix concrete operation. Replacing another make of rubber-tired loader, the HU "easily performs tasks the other machine found impossible." Gerald Campbell, general plant superintendent, remarked that the 4-wheel-drive feature of this "PAYLOADER" is the big advantage . . . it can climb loose stone stockpiles with a full load, it has the power to dig sand from pit sides for fill material and the speed to stockpile or load-out trucks with special sand or stone orders all over the plant area. Ample engine power and excellent operator vision are added factors in the HU's fine performance.

YOU, TOO, WILL FIND that among rubber-tired tractor-shovels, none can match the versatility, mobility and productive capacity of the new 4-wheel-drive "PAYLOADER" units. More reliable traction, greater digging power and faster, easier operation are some of the "PAYLOADER" advantages that appeal to operators who know tractor-shovels best. You get better performance from a "PAYLOADER" because of these outstanding features: power-transfer differentials, no-stop power shift transmission, planetary final drives, power steering, power brakes and closed, pressure-controlled hydraulic system. A nearby Distributor is ready to prove that a "PAYLOADER" can out-perform anything in its class—to have you try one on your work. Call him today.



The knowledge and experience gained in building thousands of wheeled tractor-shovels — more than all others combined — over the past 35 years is your assurance that when you buy a "PAY-LOADER" you get a unit that is superior in design, engineering and performance.



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**THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.**  
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## THE FRANK G. HOUGH CO.

705 Sunnyside Ave., Libertyville, Ill.

Send more data on 4-wheel-drive "PAYLOADER" tractor-shovels as checked:

- ☐ HO - 9,000 lb. Carry Cap. (1 to 4 cu. yd. buckets)
- ☐ HH - 7,000 lb. Carry Cap. (7/8 to 3 1/4 cu. yd. buckets)
- ☐ HU - 5,000 lb. Carry Cap. (3/4 to 2 1/4 cu. yd. buckets)

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

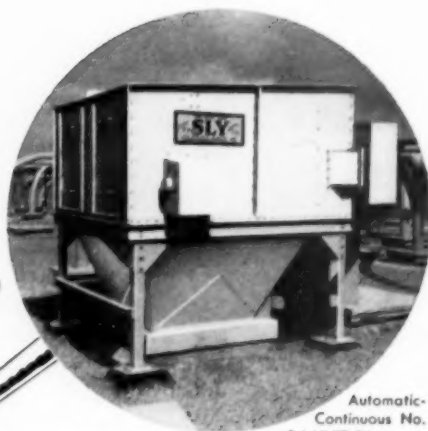
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112

**"Midget"**  
**SLY**  
**Filters**  
**Do BIG Job**  
**at Lehigh**



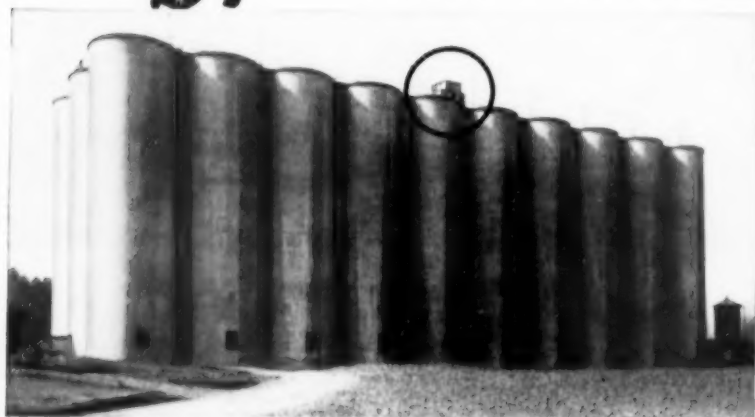
Automatic-Continuous No. 34 UNIT Filter.

The two Sly Filters in the illustrations pack plenty of filter cloth into their small overall dimensions. That's why they do such a big job for Lehigh Portland Cement Company, Allentown, N. Y. The Automatic-Continuous Sly Dust Filter handles 2,500 cubic feet of cement-dust-laden air per minute from silos being filled by pneumatic pumping system. The Automatic-Continuous UNIT Filter handles 1,000 C.F.M. Yet each is little more than six feet long.

Both feature a Sly design that eliminates costly piping. Dust-laden air enters the filter upward direct from the silos. When the filter bags are shaken, cement dust drops back into the silos.

This installation shows how Sly designs and installs dust control systems to produce maximum benefits for lowest cost . . . indicates why more Sly Filters are used by the cement industry than any other make.

REVIEW THE SLY LINE —  
WRITE FOR BULLETINS 93, 98, 102



Circled is the Automatic-Continuous Type ED 260, No. 34 Filter.

**THE W. W. SLY MANUFACTURING CO.**  
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## INDUSTRY NEWS

(Continued from page 86)

### California plant expansion includes kilns, TV relay

CALIFORNIA PORTLAND CEMENT CO., Los Angeles, Calif., engaged in an expansion program at its Mojave plant, has put the first of three additional kilns in operation. The two other kilns will be in operation in August to bring the plant's capacity to approximately 17,500 bbl. of cement per day.

Plans also call for installation of a closed circuit television relay that will permit a constant check on operations throughout the crushing system.

### Organize feldspar firm

BLACK HILLS CHEMICAL AND FELDSPAR CORP., Custer, S. Dak., has been capitalized at \$500,000. Directors are Amos V. Burnside, Elmon Roy and Carl Heidepriem of Custer; V. J. Piekenbrock and Edwin W. Sievers of Scottsbluff, Neb.; Eugene V. Schefcik, Alliance, Neb., and Thorval Lockwood, Gering, Neb.

### Portland cement production

THE PORTLAND CEMENT industry produced 22,642,000 bbl. of finished cement during March, 1957, as reported by the U. S. Bureau of Mines. This was a decrease of three percent from March, 1956. Mill shipments totaled 20,551,000 bbl., a decrease of eight percent, compared with March, 1956, while stocks on hand were 34,267,000, 15 percent more than on the same date a year ago.

Clinker production during March, 1957, amounted to 25,617,000 bbl., a decrease of one percent from the March, 1956 figure. The output of finished cement came from 162 plants in 37 states and Puerto Rico. During the same period of 1956, 23,386,000 bbl. of finished cement were produced.

### Ytong plant to produce lightweight cellular units

WASHINGTON YTONG CORP., Seattle, Wash., will build a plant in Tacoma for the production of Ytong, the lightweight cellular building material that originated in Sweden. According to J. G. Ortengren, manager, the new plant calls for an outlay of more than \$1,300,000, and of this amount, approximately \$250,000 will be spent on buildings. Information in the June issue of ROCK PRODUCTS was incorrect on these points.

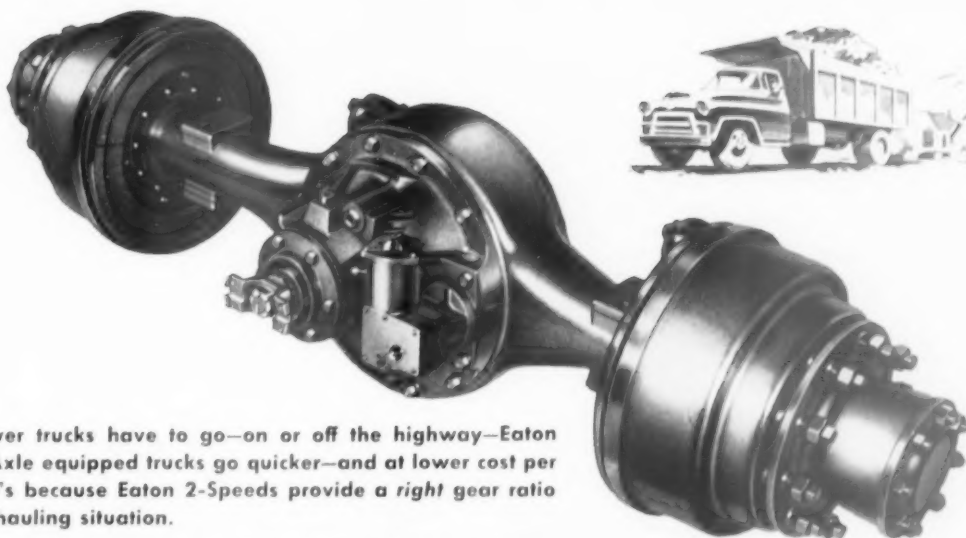
(Continued on page 92)

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# GO

when they are  
equipped with

## EATON 2-SPEED AXLES



**W**herever trucks have to go—on or off the highway—Eaton 2-Speed Axle equipped trucks go quicker—and at lower cost per mile. That's because Eaton 2-Speeds provide a *right* gear ratio for every hauling situation.

To enable truckers to "make time" on the open highway, Eaton 2-Speed Axles provide a HIGH-HIGH ratio—trucks GO at top legal speeds. When POWER is needed on steep grades or to pull out of tough off-the-highway spots under full load, drivers select the LOW-LOW ratio—and GO! This wider choice of gear ratios means reduced stress and wear on engines and other vital truck parts. It means that Eaton 2-Speed Axle trucks keep GOing for many extra thousands of trouble-free miles—they cost less to operate and maintain, and are worth more at trade-in time.

More than Two Million  
Eaton Axles in Trucks Today.  
For complete information,  
see your truck dealer.

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ROCK PRODUCTS, August, 1957

91

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Write to SPRAGUE & HENWOOD, INC. today for an estimate, giving complete information, and it will be on its way to you just as quickly as possible...without obligation.

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## INDUSTRY NEWS

(Continued from page 90)

### Lime Co. takes case to Texas Court of Appeals

TEXAS LIME CO., Cleburne, Texas, heard a favorable verdict from the Court of Civil Appeals, Waco, when it appealed a decision made earlier by the district court of Johnson County. The firm was named along with Limestone Products Co., from whom it leased its property, as defendant in a suit for permanent injunction and damages brought by 12 used-car dealers operating in the vicinity of the plant. Alleged damage from dust to automobiles was the principal complaint brought in the suit.

The writ of injunction against both defendants was not granted by the trial court; this the court of appeals affirmed. It affirmed also the judgment of the trial court in favor of Limestone Products Co. as having no obligation toward the plaintiffs; in other respects it reversed and remanded the trial court's decisions. These involved sums ordered to be paid by Texas Lime Co. to the 12 plaintiffs for cleaning, washing, and waxing the cars and for depreciation of car and land values.

The court decreed that the plaintiffs failed to specify in the respective pleadings the damages claimed to have been sustained by each plaintiff to each specific automobile, thus the defendant could not prepare defense without knowing what it had to meet. Further, it granted the defendant's plea of misjoinder of parties and causes of action; in other words, each plaintiff should plead his case separately, and would be allowed to do so.

### Develops perlite deposit

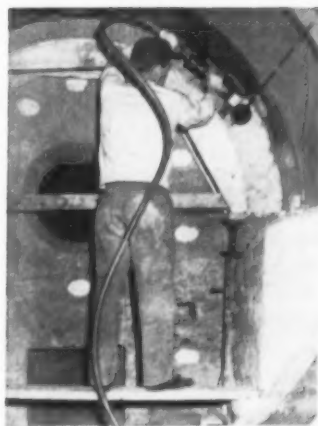
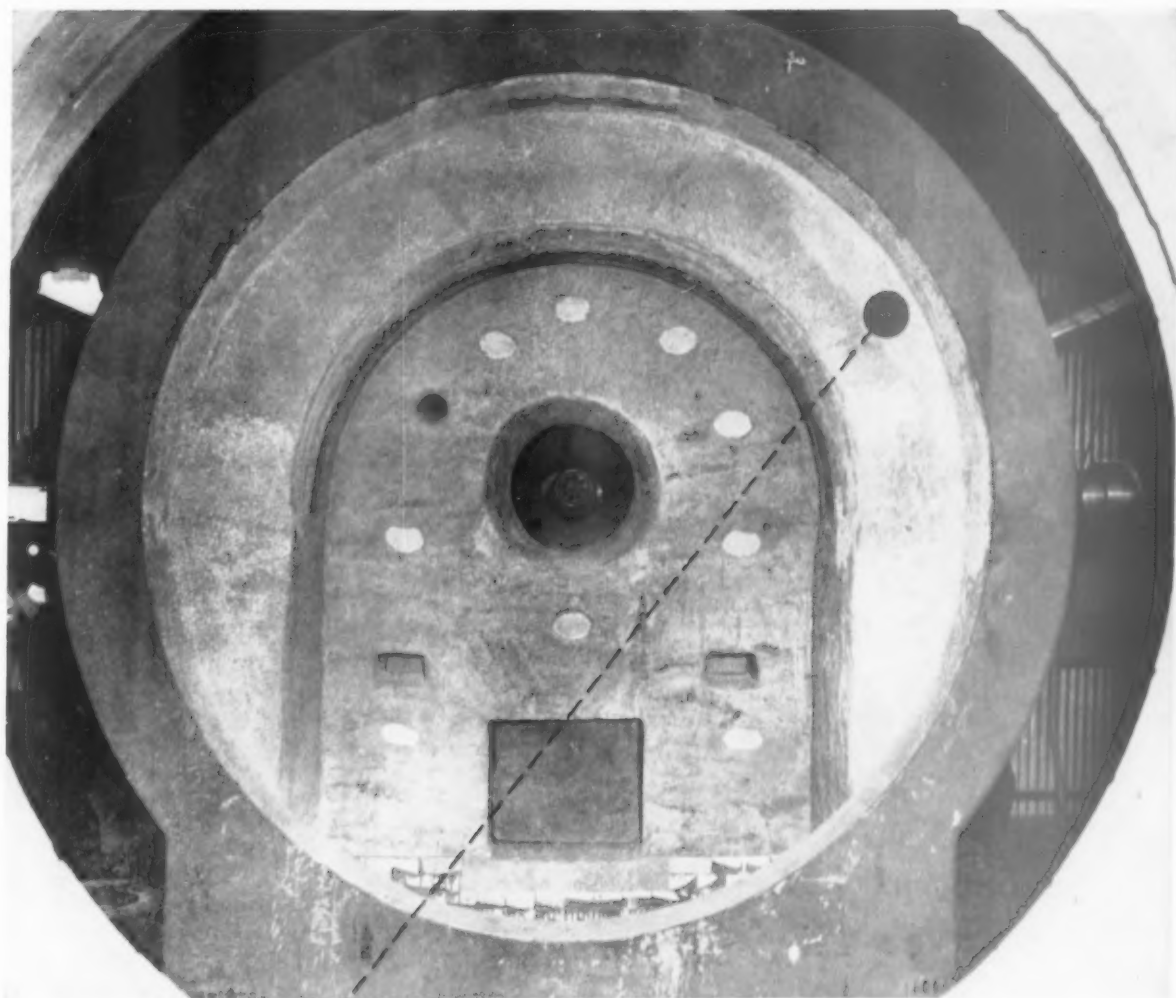
SOLAR METALS CO., Taos, N. M., has conducted a core-drilling program to determine the extent of a perlite deposit 30 miles northwest of Taos. Findings indicated that the deposit contains 1,500,000 tons of the material. Mining will be carried out by Taos Minerals Co. through an optional agreement with Solar Metals. The mining and processing of perlite are expected to get underway soon.

### Enlarges asbestos plant

POWHATAN MINING CO., Baltimore, Md., has erected a 4,000 sq. ft. addition for installation of additional equipment expected to double the firm's output. Fred A. Matt is president of the company which processes fiber taken from its own mine as well as other sources.

(Continued on page 94)





## Firing Hoods Go In *Fast* with MAX-BOND...

... and the kiln is back on the job faster because MAX-BOND doesn't require lengthy "drying-out" time. The kiln can be fired more quickly after installation. Mexico Refractories Company Development Engineers perfected MAX-BOND after years of research; it has proven itself on-the-job. Its workability reduces installation costs; this, plus balanced properties assure longer hood life. MAX-BOND stands both physical and thermal abuse...behaves beautifully throughout the temperature-range up to 3000° F. Abuse it if you will—to increase production—it can take it!

*We are able to field-engineer our products to meet your particular requirements  
—with no obligation. In all respects WE SEE YOUR JOB THROUGH!*

**MEX-R-CO**

MAX-BOND is "Poly-wrapped" to Stay Fresh! <sup>121</sup>

### **MEXICO REFRACTORIES COMPANY**

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**2000-FT. H-R BELT  
LIFTS 35-TON LOAD  
UP AN 18° SLOPE**

National Gypsum Company's Shoals, Ind. mine has a Hewitt-Robins conveyor with the highest tensioned textile carcass conveyor belt in existence. Because of the terrific strength of this H-R Super Raynile belt, the 250 hp. motor and H-R Jones speed reducer can start this 2,065 ft. conveyor with a 70,000 lb. load on an 18° slope.

Here, as in hundreds of other installations, Hewitt-Robins engineered, manufactured and installed the complete bulk materials handling system. To find out how H-R products and services can help you, consult your classified telephone directory for the nearest H-R representative, or contact Hewitt-Robins, Stamford, Conn.



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**INDUSTRY NEWS**

*(Continued from page 92)*

**Sand, gravel firm  
enlarges its field**

THE STONEWAY SAND & GRAVEL Co., Renton, Wash., has acquired property for erection of a \$75,000 warehouse and office building in Kent, Wash. Stephen L. Dowell, son of Stoneway president L. J. Dowell, will manage the Kent office. A stock of building materials will be carried, but all sand, gravel and ready-mixed concrete will be hauled to the Kent yard from the firm's plants in Renton.

**Coming Conventions**

**August 25-31, 1957—**

**National Sand and Gravel Association, Semi-Annual Meeting, Board of Directors, Manoir Richelieu, Murray Bay, Quebec, Canada**

**September 9-12, 1957—**

**American Mining Congress, 1957 Metal Mining and Industrial Minerals Convention, Salt Lake City, Utah.**

**October 9-11, 1957—**

**National Slag Association, 40th Annual Meeting, Plaza Hotel, New York, N.Y.**

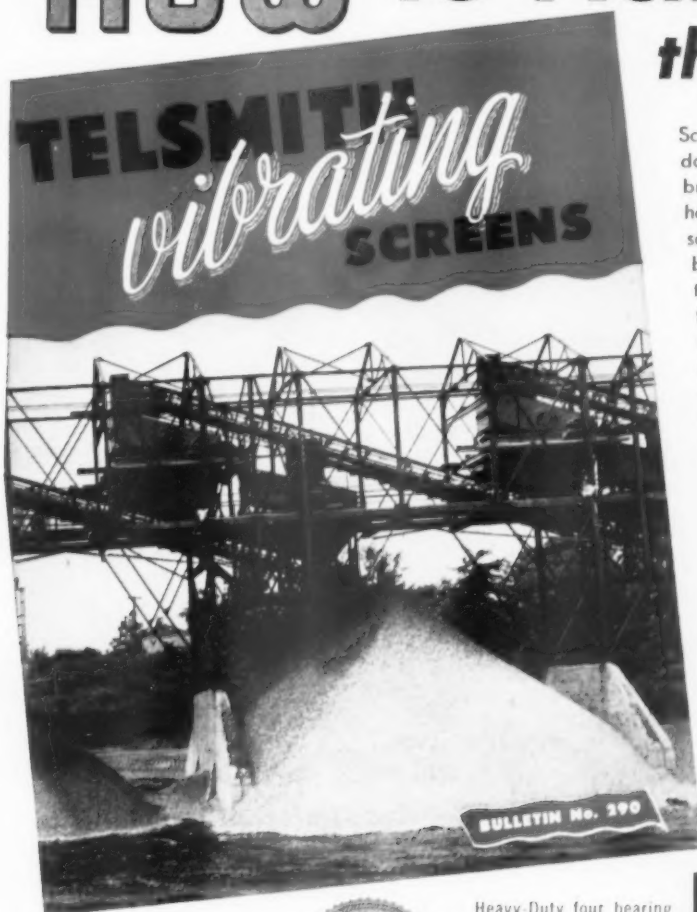
**October 15-18, 1957—**

**Society of Mining Engineers of A.I.M.E., Annual Meeting and Southeastern States Mining Conference, Hotel Hillsboro and Hotel Tampa Terrace, Tampa, Florida**

**October 17-19, 1957—**

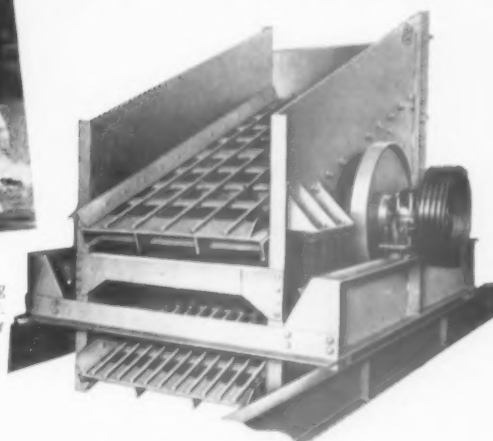
**Empire State Sand, Gravel and Ready Mix Association, Annual Meeting, Lake Placid Club, Lake Placid, N.Y.**

# HOW TO PICK SCREENS that pay profits



Screening aggregates is a tough job—but it can be done efficiently and at low cost—with Telsmith Vibrating Screens. This new Telsmith bulletin tells you how. It explains which type of screen is best for scalping...sizing...washing—and why Telsmith builds two types of four bearing screens and one type of two bearing screen. It describes each type; shows several new Telsmith Vibro-King features, including—new counterweight mechanism and new spring suspension, making it the smoothest and most efficient screen you can buy, either for scalping or finishing. Shows new heavy-duty tray construction; best methods for mounting screen cloth. Full of helpful pictures, diagrams and specifications.

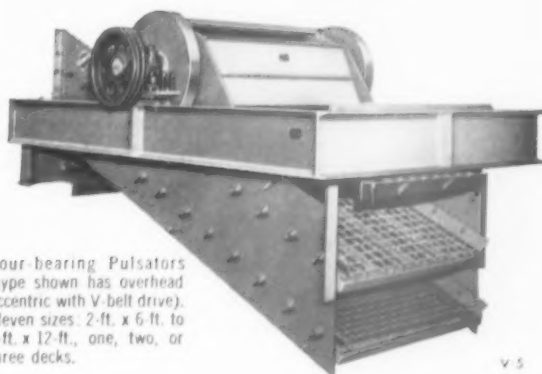
**Get this NEW BOOK  
FREE—Ask for No. 290**



Heavy Duty four bearing  
Scalpers—seven sizes: 3 ft.  
x 6 ft. to 5 ft. x 14 ft., one or  
two decks.



Two-bearing Vibro-King  
Screens—eleven sizes: 3-ft.  
x 6-ft. to 5-ft. x 16-ft., one,  
two, or three decks.



Four-bearing Pulsators  
(Type shown has overhead  
eccentric with V-belt drive).  
Eleven sizes: 2-ft. x 6 ft. to  
5 ft. x 12 ft., one, two, or  
three decks.

V-5

**SMITH ENGINEERING WORKS**

**508 E. CAPITOL DRIVE**

**MILWAUKEE 1, WISCONSIN**

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ROCK PRODUCTS, August, 1957

95

# HINTS AND HELPS

Profit-making ideas developed by operating men

## Send Us YOUR Ideas

We would like to make this column better, and we can, with your help. In the past, we have depended upon our field editors almost exclusively for *Hint and Help* items. However, we feel that a wealth of material exists that only you can uncover. YOUR *Hint and Help* ideas, no matter how simple (in fact, the simpler the better) may interest other readers. For each idea accepted, you may receive either a cigarette lighter engraved with your name or \$5.00. A photograph or rough drawing should accompany each item. Send ideas to:

Hint and Help Editor  
ROCK PRODUCTS  
79 West Monroe St.  
Chicago 3, Ill.



## Belt feeder on rollers



THIS WESTERN CRUSHED STONE producer wanted to be able to get to his crusher without dismantling the belt feeder above it. As a result, he had the frame of the feeder mounted on a set of rollers which use a pair of standard beams as rails. Now the belt feeder can be readily moved out of the way at any time or can be located exactly, right over the crusher hopper.

## Belt cleaning method devised for sand, gravel plant

THE PERFECT BELT WIPER has not been invented. Each material requires one designed for it particularly and even then it is seldom completely satisfactory. However, this midwestern sand and gravel plant found that water sprays on the return portion of the belt proved to be most satisfactory.

The gravel had a small fraction of fine sand, and this sand adhered to the belt. In time the abrasive sand built up on the return idlers, or dropped off

at the takeup end in the tunnel—a most inconvenient place. A few gallons a minute sprayed on the underside of the conveyor stripped off the thin film of sand, which was then sluiced to the side where it could be hauled away.

## New use for old boilers



OLD BOILERS CAN BE USEFUL, as this west coast sand and gravel producer demonstrated. Here he uses one as a reclaim tunnel to an auxiliary truck dump hopper which could be located at ground level and very close to the main storage pile.

## Waste water sluice

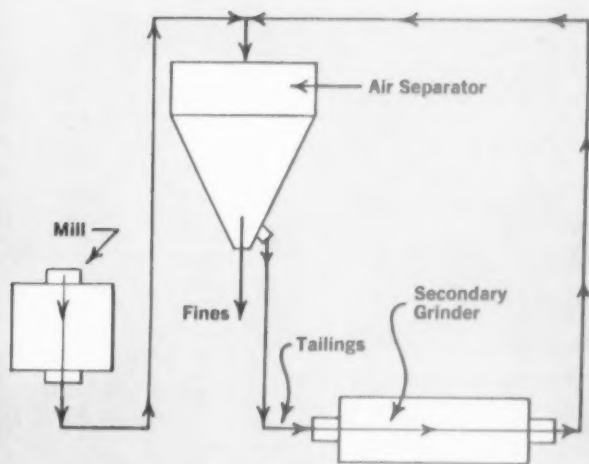


THIS INGENIOUS SAND AND GRAVEL producer sluices his tailings back to his pond in this pipeline of old 55-gal. drums. As they wear from the action of the abrasive sand fines he merely rotates the pipe. In the meantime the wear has not materially weakened the structural strength of the sluice. He has found that the drums are easier to install, repair and replace than a tailor-made sluice.

(Continued on page 98)



# Stop Overworking Grinding Mills



Secondary grinder runs open, starting circulating load through air separator. Desired fines are discharged, and oversize is fed to ball mill and then returns to air separator for further classification.

## LET STURTEVANT AIR SEPARATION HELP YOUR SYSTEM PRODUCE UP TO 300% MORE 40 TO 400 MESH FINES — CUT POWER COSTS AS MUCH AS 50%

Fines that pass through grinding mills unhindered, serving only to increase the work load, can be quickly classified by a Sturtevant Air Separator operating in closed circuit. With all oversize automatically returned for further grinding, the result is production capacity impossible to achieve in single-pass grinding — as well as a better, more uniform product.

Closed circuit grinding and air separation is of proved advantage in *all* secondary reduction processes. Grinding mills are free to perform at top efficiency, their output frequently increased as much as 300% and power costs cut up to 50% (documented by 30 years of Sturtevant air separation experience in the cement industry). Further, attritional heat is dissipated by greater surface exposure.

### Sturtevant Air Separators Keep Grinding Units At Peak Efficiency — Classify Feed Loads to 800 Tons Per Hour

Sturtevant Air Separators circulate production loads with exact control of air currents and centrifugal force. Simple adjustments make possible counter-action between the two to the point where a product of almost any desired fineness may be collected while coarser sizes are rejected.

A 16 ft. Sturtevant, for example, took a feed rate of 800 tph, containing only a small percentage of desired fines, and delivered 30 tph 90% 200 mesh, recirculat-

ing the oversize through the grinding circuit. (In the cement industry, Sturtevant units deliver up to 60 tph raw cement fines, 40 tph finished cement fines.)

Sturtevant's ability to engineer precise, high capacity classification for closed circuit grinding systems is the result of long experience with a wide variety of dry processes. Sturtevant designed its first air separator some 40 years ago — and has been pioneering developments in centrifugal classification ever since.

Current users of Sturtevant Air Separators include manufacturers of sulfur, soybeans, phosphate, chocolate, feldspar, sand, pigments, limestone fillers, abrasives, plasters, ceramics and cement.

Designed for precise separation of all granular materials, Sturtevant Air Separators have been adapted to other materials as well. Johns Manville, for example, uses a 10 ft. model to separate 3 to 6% undesirable rock from asbestos.

Ruggedly constructed, Sturtevant units are designed for minimum maintenance — at a Midwestern rock crushing plant, a 10 ft. Separator operates outdoors year-round with only routine care.

For further information, request Sturtevant Bulletin No. 087. Write Sturtevant Mill Co., 102 Clayton St., Boston 22, Mass.

## STURTEVANT Dry Processing Equipment

CRUSHERS • GRINDERS • MICRON GRINDERS  
SEPARATORS • BLENDERS • GRANULATORS  
CONVEYORS • ELEVATORS

Enter 1006 on Reader Card

## HINTS AND HELPS

(Continued from page 96)

### Overstressed chain gauge



OVERSTRESSED CHAINS or deformed hooks of hand hoists are a source of possible accidents. A midwestern cement mill developed a hand gauge which can measure the stretch of coil chains in their hoists. In this way they can detect a chain which has been worn or stretched beyond maximum tolerance. The gauge can be used to measure the spread of hooks. Any hook which has opened up too much under load can be discarded.

### Stop flying rock!



VIBRATING SCALPING SCREENS often transmit enough energy to large pieces of rock or gravel to send them flying out into space. Even oversize chutes or bins often cannot contain the oversize product of screens. A midwestern gravel plant solved this problem by a curtain of heavy chains at the discharge of their scalping screen.

The chains absorb the impact of

flying stone and direct them right into the hopper of the primary crusher just below. The tower above the crusher is heavy enough to handle the parts of the crusher, and can easily accommodate the hoist which suspends the chain screen.

### Mobile workshop

AN UNDERGROUND MINE, already nearly 100 acres in area, found that maintenance jobs were getting further apart as the perimeter of the mine increased. They rigged up this jeep as a mobile workshop, equipped with spare parts, tools and welding equipment. Now the same crew can service the remotest part of the mine just as quickly and easily as the processing plant which is some distance out of the mine.

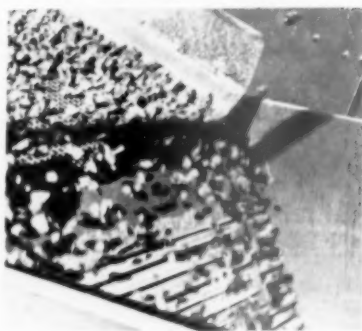


### Face shield improvement

A MIDWESTERN CEMENT PLANT has developed an improvement on the face shield used to observe the interior of kilns. A fibre gasket strip which extends the length of the handle has been bolted to the shield to protect the hand and forearm from heat.



### Preventing impact fatigue



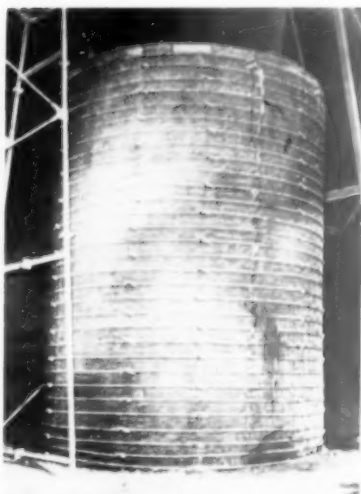
IMPACT FATIGUE RATHER than abrasive wear is often the cause for the rapid destruction of steel chutes, hoppers or liner plates. Screen hoppers, chutes and the fabricated transfer points of belt conveyors are vulnerable, even when handling non-abrasive materials.

This southern limestone producer has welded pieces of alloy steel drill rod in the chutes and hoppers of his vibrating screens. The tool steel rods stiffen the steel plates and, at the same time, prevent the stone from beating holes in the chutes.

### Surge storage silo

IN RESTRICTED AREAS, unconfined surge piles of materials often spread out beyond the reach of reclaim conveyors and get in the way of production traffic.

This southern salt producer solved



these problems by erecting a small surge storage silo of concrete stave construction. As a result, he not only reduced congestion around the storage area but practically eliminated dead storage and contamination of material.

END

# "Eucls" STEP UP PRODUCTION...



Full length and width bottom door opening and wedge shape of body provides fast, clean dumping into the drive-over hopper at the plant. In just a few seconds the "Eucls" dump their loads and are on the way back to the pit.

## ... at new Quigley Plant of Ft. Worth Sand and Gravel Co.

Three Bottom-Dump Euclids of 17 yd. struck capacity are working 10 hours a day, five and one-half days per week, at the new Quigley plant of Ft. Worth Sand and Gravel Company. One of the most modern in the Southwest, it recently replaced the oldest and largest of the company's four plants.

A 2½ yd. dragline loads the "Eucls" with sand and up to 3 inch gravel for the 1½ to 3 mile haul from pit to plant. The Euclids dump their 22-ton loads into a drive-over hopper that feeds the classifier. Average hourly production is 255 tons.

Euclid equipment has reduced hauling costs on hundreds of mine, quarry and industrial operations. Have your Euclid dealer give you full details on the complete line of Rear-Dump and Bottom-Dump haulers for off-highway work, self-powered Scrapers and the TC-12 Crawler Tractor. He has facts and figures that show why owners everywhere have proved that **Euclids are your best investment.**

EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio



Powered by a 300 h.p. engine 10 speed transmission, the "Eucls" maintain fast travel speed on the well maintained haul roads. One-way hauls from pit to plant are up to 3 miles long.



Draglines with 2 yd. and 2½ yd. buckets and 60' booms load 22 tons of sand and gravel at the pit. The low, wide hopper of the "Eucls" makes an easy target for fast easy loading with minimum spillage.



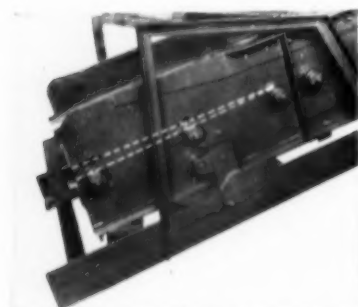
## Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE





This is the new type UHS 5' x 14' Triple-Deck Deister that screens an average of 1,500 tons daily for the Meshberger Stone Company of Columbus, Indiana.



#### EXCLUSIVE ADJUSTABLE SLOPE PANELS

Panels at both feed and discharge ends may be adjusted independently to increase or decrease screening angle.



Enter 1007 on Reader Card

## "We couldn't ask for any better screens than **DEISTER** makes"

That's the considered opinion of the two men who run the busy Meshberger Stone Co. aggregate plant at Columbus, Indiana—in the famed limestone belt of Southern Indiana.



"We couldn't ask for better screen equipment than Deister," says Leon Meshberger, president. "After 11 years experience with Deister, I wouldn't consider anything else."

For 10 years, Meshberger Stone depended entirely on a 5' x 12' Triple Deck Deister to turn out an average of 175 tons an hour, 1,500 tons a day. Last year they installed a new type UHS 5' x 14' Triple-Deck Deister. But the veteran 5' x 12' isn't being scrapped. It's being modernized to incorporate Deister's newest features

... then it's going back into service.

"I don't see why it shouldn't go on indefinitely," says Plant Superintendent Robert Studler. "It ran for more than 10 years with no repairs and no attention beyond normal maintenance. It's got years and years of good service left."

If you plan to expand or to modernize . . . or need improved equipment to meet today's rigid specifications, you, too, can benefit from such exclusive Deister features as Adjustable Slope Panels . . . Unitized Life-Time Vibrating Mechanism, and Deister's Opposed Elliptical Throw, which controls movement of the material on the screen for greatest sizing speed, efficiency and maximum production. Write for recommendations on your screening problems.

**DEISTER MACHINE COMPANY**  
1933 East Wayne Street, Fort Wayne 4, Ind.





## The ideal story

A large part of this issue is devoted to a comprehensive look at the Ideal Cement Company—a company that has been an outstanding example of youthful thinking. Although ROCK PRODUCTS has never before attempted such a thorough examination of a single company, we feel that we have chosen well and that what is presented on the following pages will be helpful information to guide you in your own operation.



## ... a story of youthful thinking, progressive ideas

**L**AST NOVEMBER, THE IDEAL CEMENT CO.—of Colorado, Texas, Alabama and sundry other points north, south, east and west—announced a \$176 million expansion program. There were several unusual things about this announcement. It came at a time when most cement companies were pulling in their expansionist horns and playing things close to the chest. It projected a further large-scale growth of what was already one of the largest cement manufacturing companies in the world. It represented the first time that the Ideal Company ever needed to borrow a substantial amount of money in order to grow. And it drew into sharp focus the philosophy of a company that has been an outstanding example of youthful thinking in a generally staid and conservative industry.

If Ideal's plans shape up as now expected—and looking at past performance there is no reason to suspect they won't—the company will be making about 40 million bbl. of cement a year by 1966, 16 million bbl. more than they produced in 1956 but about what they figure they will need to hold their own in the country's expanding economy. Operating mainly throughout the wide open spaces of the American West, this is an unusual record—especially in view of the fact that Ideal was making only 7½ million bbl. of cement annually in 1945.

Today, Ideal employs 3,275 people, operates 15 plants at 14 locations and three terminals serving more than 20 states. In an industry which is perpetually reluctant to give out production figures, it is proud to tell the world that it produced nearly 24 million bbl. of cement in 1956 and is taking aim on a much higher figure in the very near future.

The phrase that perhaps best explains this growth is young ideas—soundly anchored to solid business principles. Ideal is a vigorous, youthful corporation, not so much in age as in ideas. Here are a few examples of how youthful and progressive thinking can operate to make a cement company grow and prosper:

When Ideal wanted a study made of raw materials available for its Arkansas plant, an expert was hired to analyze its deposits. It took him six months of searching application, but he solved the problem. That was seven years ago; the geologist, who had been hired for that single job—John Wolfe—has been with the company ever since and now has a staff of six people helping him collect an impressive mass of data on mineral deposits. Ideal knows the geological structure of all its plant



**Charles Boettcher**, founder of Ideal Cement Company



**C. K. Boettcher**, past Chairman of the Board

areas so intimately that company officials can put their finger on reserve deposits almost at a moment's notice.

On a remote island (with the unlikely name of Texada) near Vancouver, B. C. are located some of the finest limestone deposits in North America—resting but a short distance from the Pacific Northwest-Puget Sound area and the plants of several cement companies. The island had been investigated by boat a number of times, and was considered of no value because the deposits at water level were high in magnesia. It remained for Ideal to send geologists inland and discover and secure the deposits. At an appropriate time, Ideal is now in a position to make practical use of these resources which had been by-passed by others for many years.

Ideal is one of the few cement companies to give scholarships to college engineering students. Ideal has long been interested in young people, who play an important role in the Ideal operation. As executive vice-president Murrell Matthews points out, "We're an expanding corporation and we have attracted a fine group of young personnel. It's amazing how young men develop when you give them responsibility—and we try to give them all they can take. They love it, too. Now, although engineers are hard to come by, we have been able to attract some fine young men who value long-range possibilities more than the immediate prospects."

The company can point back to a highly unusual financial record. Since the original formation of the



**Management meetings** such as this one are held every Wednesday morning at Ideal. Reading clockwise from lower left-hand corner are: J. W. Hand, business research director; H. B. Bolton, vice president—administration and general sales manager; E. F. Saulsberry, general purchasing agent; C. B. Flick, secretary-treasurer; Frank N. Price, industrial relations director; T. B. Douglas, vice president—operations; M. O. Matthews, executive vice president; O. F. Counts, vice president and comptroller; Cris Dobbins, president

company no stock has been offered for sale to raise additional capital. Some bank borrowing was used in 1946, repayment having been made well in advance of schedule in March of 1954 out of funds generated from depreciation, depletion, accelerated amortization and retained earnings. Yet it has expanded at a steady pace—partly by acquisition of small properties but mostly by building new plants of its own.

When the high-speed pace of Ideal's operations transcended normal means of travel in 1946, the company bought an airplane—a DC-3 which they use constantly and which has paid for itself many times over by getting Ideal executives quickly and comfortably to plants or sales offices in their far-flung area of operations. Ideal's president, Cris Dobbins, and vice-president Matthews have logged over a million air miles apiece and are veterans of working while on the move in the plane.

Matthews recalls with fondness the part played by the plane in Ideal's acquisition of its Mobile, Ala., properties. The Ideal plant in Mobile was formerly a government alumina factory, built during the war but never operated and then abandoned. There seemed no ready source of raw material close at hand for cement making. However, Ideal didn't give up easily. Matthews began fraternizing with old-time fishermen and several of them told about a reef of oyster shells in Mobile Bay. Investigation turned up 287 million cu. yd. in one reef, and Ideal was in business. Or almost. Company executives made countless trips



**Cris Dobbins**  
President



**M. O. Matthews**  
Executive vice president



**T. W. Rosebaugh**  
Vice president



**O. F. Counts**  
Vice president  
and comptroller



**C. B. Flick**  
Secretary-treasurer



**Ideal's Mobile, Ala., plant**

## A story of youthful thinking

*continued . . .*

with the Ideal plane, untangling government red tape until finally Ideal was able to acquire title to its Mobile plant. Typically, Ideal also bought some lime rock deposits fifty miles distant—just in case the shells some day give out.

In this issue, ROCK PRODUCTS hopes to perform a potent service by introducing its readers to the

Ideal Cement Company rather intimately. Ideal represents something of a milestone in the cement industry. It embodies to a very large extent the young, alert, progressive thinking which built the cement industry in the first place, subsided as a result of the depression, came back in fits and starts after the war—and now is becoming a moving force once again. Ideal not only has this youthful outlook, but it has also produced some remarkable results while growing—as only the most virile youth can—into a stout, well-muscled, alert giant. We at ROCK PRODUCTS feel that the story of how that growth came about and how it is reflected in the present operating practices at Ideal is a story not just of interest but of real helpfulness to the cement and allied industries.

The story of Ideal's early growth is the story of Charles Boettcher, who came to this country from Germany in 1852, got into the cement business in 1901 almost by accident, and stayed in it to develop the start of one of the largest cement companies in the nation—along with various other





enterprises which also prospered under the Boettcher touch. Charles Boettcher's remarkable vigor (he was 96 when he died in 1948) is characteristic of the Ideal Company today. Yet there came a basic difference through the succession of leadership; the company, once dominated by a single powerful figure, is now a team operation in the highest sense—a team operation with the accent on youth. At the helm, as chairman of the board, until June 9, 1957—just this year—was Claude K. Boettcher, the son of the founder. He died on the eve of his 82nd birthday and until a day or two before his passing coached the management team at Ideal daily. He saw to it that the executive team was strong not only in talent but in depth insuring a continuity of the progressive character of the company beyond the importance of any individual on the team.

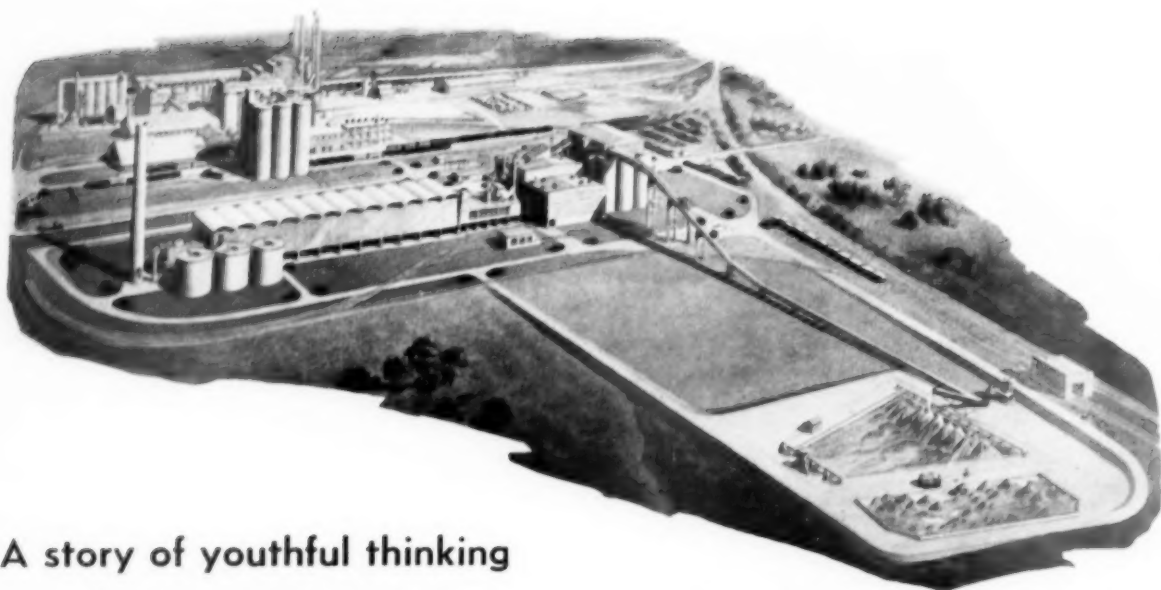
As Cris Dobbins points out: "There are no fences here. Anybody can talk to anybody else any time—and does."

The principal instrument in bringing this about was a reorganization of the company management after a few years of operating in the post-founder period. The load on Dobbins and executive vice-president M. O. Matthews was tremendous. So they decided to spread it around by surrounding themselves with some sharp young execu-

tives. Three vice-presidents were named: Harry Bolton to head up sales and administration; Tom Douglas in charge of operations; and O. F. Counts as comptroller. Bruce Flick was brought in as secretary and treasurer and John Hand was appointed director of business research. The creation of this latter job is symptomatic of the Ideal philosophy. Mr. Hand keeps a constant finger on the business pulse of America so that Ideal can step quickly and decisively into any situation that appears profitable for a cement company.

One other element has entered into the Ideal success story—and it's difficult to overestimate its importance. Ideal has a sense of humor. There is an objectivity among its executives which permits them to step back occasionally and look at their own operations without the jaundiced eye of self-righteousness. This is a valuable asset in any business venture.

Ideal has always been much more interested in the present than in the past. The company prefers to make history rather than recount it. But, briefly, the Ideal Cement Co. grew out of a small plant at Portland, Colo., which in 1901 had been operating for about a year with remarkably little success when Charles Boettcher noticed it one day while he with four associates was building the first plant of what later became the Great



## A story of youthful thinking

continued . . .

An architectural rendering of Ideal's new Ada, Okla., plant is shown in the foreground of this drawing. In the background is the Ada No. 1 plant



Ideal's company plane, a DC3, is completely furnished so that company officials may work while en route

Western Sugar Co. Mr. Boettcher was using German cement to build his factory; and the freight cost from Germany made him wonder why it was necessary to go that far for cement. The small plant at Portland, Colo. gave him a chance to do something about this situation, and he lost no time acquiring an interest in it which shortly grew to control.

Under his direction, the plant prospered from the start. The company grew slowly at first, but made money. One of the most important reasons was Mr. Boettcher's almost fanatical insistence on top quality, always well above the specified standards. This has been a paramount considera-

tion in all of Ideal's operations ever since. Ideal rode out the depression years painfully but intact, marked time during the war, then launched a tremendous expansion after the war which more than tripled its product capacity in the last decade. Now the once tiny plant in Portland, Colo., has become the cornerstone of the nation's fourth largest cement manufacturing company—and it's still growing fast.

"We have to keep progressive and aggressive in this industry," says Ideal president Cris Dobbins. "No business can stand still—it either goes forward or falls behind—and in the cement business with so much construction ahead of us we have to run as fast as we can just to hold our place in the market."

One of the members of the advertising agency which services the Ideal account in Denver summed up this sort of thinking when he said, almost wonderingly, "I can't keep up with them. They're miles ahead of me most of the time."

This, then is the Ideal story. On the pages to follow, we will examine in some detail seven areas of Ideal's operations. On the technical end, we'll look at Ideal's raw materials setup, its manufacturing operations and plant maintenance. Research will come next, then we'll dig into the human equations which have been so important to Ideal's success, taking a look at safety and employee relations, examining sales and customer relations and finally dealing with publicity and public relations.

## Raw materials procurement: Ideal plans 50 years ahead

**I**DEAL'S RAW-MATERIALS PROCUREMENT practices fit snugly into the company's program of progress. Along with the change in company approach to its problems—with the accent on new ideas, backed by facts—came a change in the attitude toward raw materials. Ideal digs deep, now, to get all the information possible on availability of reserves. And on the basis of that information, it makes all decisions on plant expansion and new operations.

The policy on raw materials reserves at all company plants is to assure each of enough materials for continuous operation of that plant for its normal operating life. Ideal locates and blocks reserves of cement-making raw materials for 40 years of operation at each plant.

T. B. Douglas, vice-president of operations, and who is also responsible for materials procurement, believes the 40-year figure is on the conservative side. "It's simple," he says. "You've got to know what you have (in raw materials), particularly if you expand. You've got to look ahead 50 years to get a return on your investment."

The job of pin-pointing raw materials and getting them for plant use is no little job. In 1956, Ideal used nearly 8½ million tons of raw materials in making nearly 24 million barrels of cement. Of that total, limestone represented 41.4 percent; oyster shells, 37.3 percent; and shale, 11.8 percent. Silica materials, clay, iron ore and gypsum made up the remaining 9.5 percent.

Until the early '40s, location of properties was done by the operating department, with the help of the chief chemist. The practice then was to gather data from available sources—state geological departments, other agencies, personal contacts—to give what was believed a firm basis for company decisions on expansion. In one case many years ago a plant was built on data gathered only from state geological records.

By the mid-1940's, President Dobbins decided to find out just what the company had in the way of materials reserves. He felt that a survey would take only a few months' time of a specialist, so one was hired for the job. J. A. Wolfe, a geologist, was brought in, and the work was started. Wolfe had recently graduated from the Colorado School of Mines with high honors in geology. He was supposed to report to a mining job in Bolivia in about six months. Dobbins and Matthews now admit their naivete in thinking Wolfe could get the work they wanted done within this period. When the value of scientific quarry study and raw material evaluation became apparent, Wolfe was offered a full-



A load of rock is dumped into the primary crusher at the Portland plant

## Raw materials

*continued . . .*

time job as company geologist. He accepted, sending his regrets to the Bolivian mining company.

Before long, Ideal's expansion program called for complete factual reserve data. Mr. Wolfe then was appointed to head an exploration department that was set up under Mr. Douglas. That department now employs six full-time geologists and two additional workers. They're kept busy, but the company knows just about exactly where it stands on raw materials.

**The exploration department works full time** to find out about reserves at present plants to collaborate on quarry development and to outline where they are at new locations.

Sufficient supply is only one factor Ideal insists

upon. Quality is another—and it's a fetish with management. They spend lots of time and money to get quality in raw materials. "It's the only way to assure each plant of the best material available for the manufacture of high-quality cement," says Mr. Douglas.

Just as much emphasis is placed on supply and quality of other materials used in making a mix as on limestone. Other materials include argillaceous components and additives such as iron, gypsum and silica rock.

"A plant is in poor shape if it doesn't have a suitable supply of shale or clay, just as it would be if it didn't have enough good limestone," a management spokesman said.

Types of raw-materials reserves vary much in



**A 6-yd. bite** of limestone is loaded into a Woodford car for its trip up to the primary crusher at the Lawrence quarry of Ideal's Ada plant



the company's widespread operations. They range from oyster shells along the Gulf of Mexico and San Francisco Bay areas to nearly pure limestone in the Pacific Northwest areas. Cement rock of near mix quality is found at many plants in the Rocky Mountain and Plains areas. Ideal uses a variety of argillaceous materials—different types of clay, shales, marls, schists and bauxite. Minor constituents such as iron ore, gypsum and silica involve many materials. They range from hematite iron ore to pyrite sinters for iron additive, and from silica sand to metamorphic quartz as silica additive. Raw gypsum is usually purchased, but also is produced for two plants from company-operated mines and quarries.

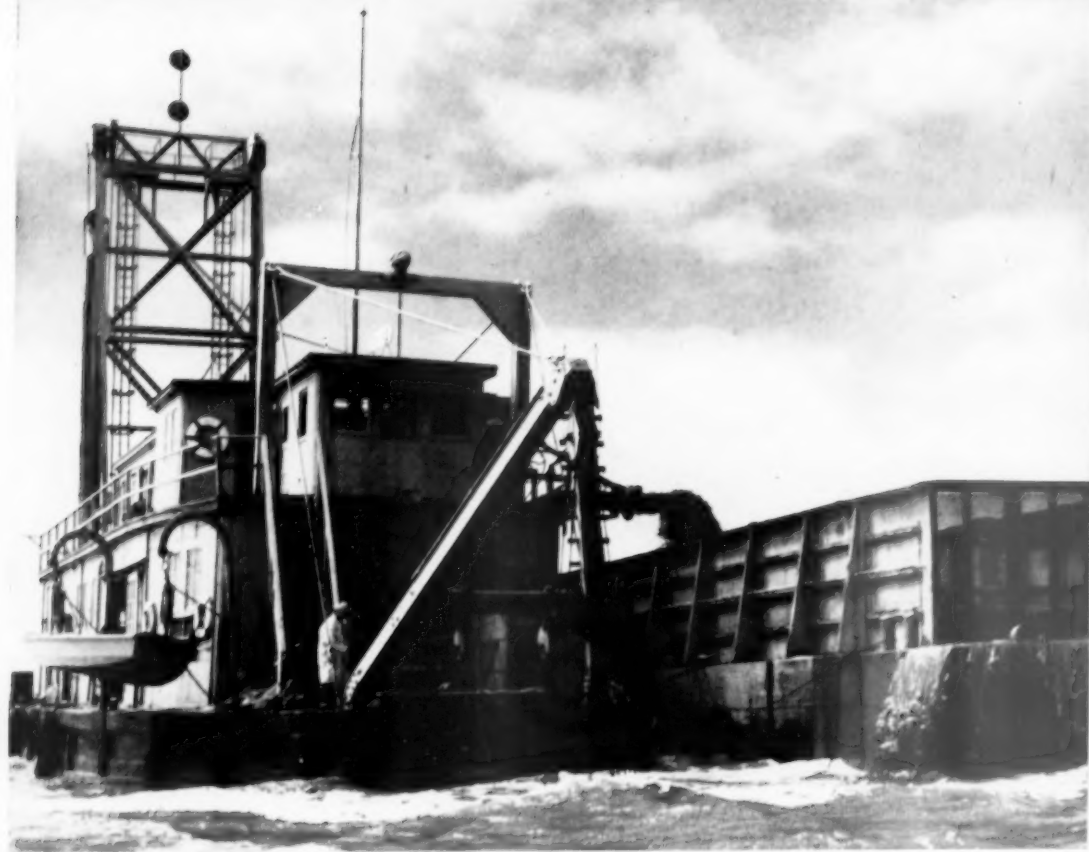
**Exploration—how it's done.** The "how-to" aspect of exploration has been developed to a fine point at Ideal. Nothing is left to guesswork, but much unnecessary work is eliminated. Result of the program is that management can, at any time, pinpoint a deposit, know how much is there and of what quality it is, how close it is to an existing or proposed plant, and about what it will cost to quarry it.

In outlining raw-material possibilities at a new site, Mr. Wolfe's geologists first make a geologic

scan of the general area involved. This work, plus surface hand sampling, shows up location of the likely areas for further detailed mapping and diamond drilling. It culls undesirable areas at this early stage and does away with a considerable amount of costly work on those areas.

Then the concentrated work begins to prove the property. Control points are set up through a detailed topographic mapping program. These points are used later for control of development work, should the property prove out. The geologists use the topographic maps for recording geologic data collected in the field. This geologic mapping program paves the way for setting up a core-drilling program which, in turn, gives enough data to prove or disprove the property.

A brief description of the exploration program doesn't do justice to the amount of work that goes into it—or the worth of the data obtained. Collected data form the basis for analyzing prospects from several viewpoints. While drilling on the property, crews keep in mind the benefits of recording information that will be helpful in developing and operating a quarry on the site. Relative location of plant and quarry is important, for high haulage rates could quite easily throw a piece of property out on the basis of economics.



## Raw materials

*continued . . .*

"Cost of quarrying and physical desirability of the raw material are deciding items," says Mr. Douglas. Either could cause an explored area to be rejected. These, and other factors, are given a critical eye when any raw material site is examined by the exploration department.

A report of the complete program then goes to the executive department. It shows how much material is there, its quality, and all other recommendations by the exploration group as to the possible value and use of the deposits. Engineering and operating departments then analyze the reports to see if the deposit can be quarried economically. At this point, final decision on use of the property is made. With the wealth of information at hand, there's no need for snap judgments. Rather, says Mr. Douglas, "Everyone has a chance to speak his piece if he wants to."

A final report on the project is made, and is sent to all interested departments. If the decision is to use the property, the engineering department makes recommendations for approval of the operating department. That report goes up the man-

agerial ladder for approval, then back down again to the working departments if it is approved at the top level.

**Variable supply problems.** Nearly every known practical method for delivering raw materials to plants is used by Ideal. Trucks, barges, railroads (both commercial and company owned), belt conveyors—all are used in the Ideal system.

In most cases, raw materials are close to plant sites. At some plants, though, source of major materials is good distance away.

Shells go by barge from suppliers in the Gulf of Mexico to Gulf Coast plants. Company-operated dredges and barges supply shells to the Redwood City, Calif., plant. Clay is moved to some shell plants by barge from company pits. But at the Baton Rouge, La., plant, clay is trucked to the plant by a hauling contractor. Ideal owns some of the barges; tug companies supply others.

Limestone supply for the Spokane, Wash., plant comes by rail 125 miles from a quarry at Northport. Ideal owns the quarry. Clay—the aluminous

Unloading oyster shells at Baton Rouge plant



The "Texas" pumps oyster shell into a barge, which will be used by Ideal's Redwood City plant

material for that plant—is trucked seven miles from a company property. But this particular piece of property is worked by a contractor, who also delivers the material.

A company limestone and shale quarry at Lawrence, Okla., supplies those materials to the Ada plant. They go by rail now, but plans are underway to install a belt conveyor the entire six miles between quarry and plant.

Trucking of limestone to the Gold Hill, Ore., plant from its quarry at Marble Mountain is contracted. The distance is about 30 miles, and most of it is the heavily traveled section between Grant's Pass and Gold Hill.

Interstate rail haulage is used to bring in materials at the Superior, Neb., plant. Ideal owns the railroad. The plant and quarry are only three miles apart—but the quarry is in Kansas. It's truck haulage for the San Juan Bautista, Calif., plant. But here the quarry is seven miles south of the plant and at a much higher elevation. Ideal owns and maintains the truck road. Shale also is trucked to this plant, a distance of nine miles.

**Quarrying methods.** Since the good raw materials are where Ideal finds them, the methods they use to get them out of the earth depend upon how company engineers apply ingenuity to physical conditions. Materials vary from a hard metamorphic limestone in the Pacific Northwest to a soft chalk-like material at the Arkansas and Nebraska plants.

Even though quarrying methods are the same, generally, throughout the company, varying locations and types of materials mined give the engineers a pretty good chance to apply some interesting modifications.

Quarrying methods at any operation may change as expansion calls for a change in plant needs. Ideal keeps its finger on the pulse of these changes,



**Tram line showing loaded car** going down the mountain to the rock tipple at the Gold Hill plant

**A view from the primary crusher** at the quarry site across the Arkansas river to Ideal's Portland plant



## Raw materials

*continued . . .*

and comes up with the right answers in "minute-man" fashion. Here's a good example:

The Lawrence quarry in Oklahoma uses a bench system, with 35 to 40-ft. benches. Limestone is drilled with a "down-the-hole" 4 $\frac{3}{4}$ -in. unit powered with a diesel motor. Now, broken stone is loaded with a 3 $\frac{1}{2}$ -cu. yd. electric shovel into cars on a Woodford electric haulage system. Equipment and methods will be changed for two good reasons: (1) To increase output when a new 4,500-bbl. per day plant is completed at Ada, and (2) to get good reserves at the bottom of the deposit. The Woodford system controlled the depth of

quarrying the deposit to a level above the high-quality low reserves. It also was restricted as to production capacity.

The Woodford system is being replaced by a fleet of 22 $\frac{1}{2}$ -ton rear-dump trucks. They will be loaded by a 6-cu. yd. electric shovel. A new 1,000-tph. crushing plant is being built at the quarry, and truck haulage will begin when it is completed. These equipment and method changes will allow the quarry to produce more high-quality materials to serve the Ada plant. Also, shale at the quarry now is loaded into railroad cars by a 2 $\frac{1}{2}$ -cu. yd. electric shovel. It will be trucked to the crusher and conveyed to the plant when the quarry crushing plant is started.

Most Ideal quarries use a benching system, with an electric shovel loading broken material into trucks for delivery to a crushing plant. Exceptions to this normal practice make for interesting operating applications. Quarries at Trident, Mont., and Devil's Slide, Utah, use a coyote system of rock breaking. A recent coyote shot at the Utah quarry brought down more than one million tons of material, with good fragmentation.

The method used at Northport, Wash., plant is unique and perhaps the most interesting. Limestone is mined with a series of high faces and narrow benches from a high-up deposit injected with dike material. Long blast holes—from 45 to 100 ft. in depth—are used with the high faces to mine the steep hillside, at the same time keeping out the poor material. Stone is pushed over the sides of the narrow benches, from top to bottom, with a dozer. All is loaded on the lower level into trucks for hauling a short distance to the crusher.



## Ideal's manufacturing setup places major emphasis on men

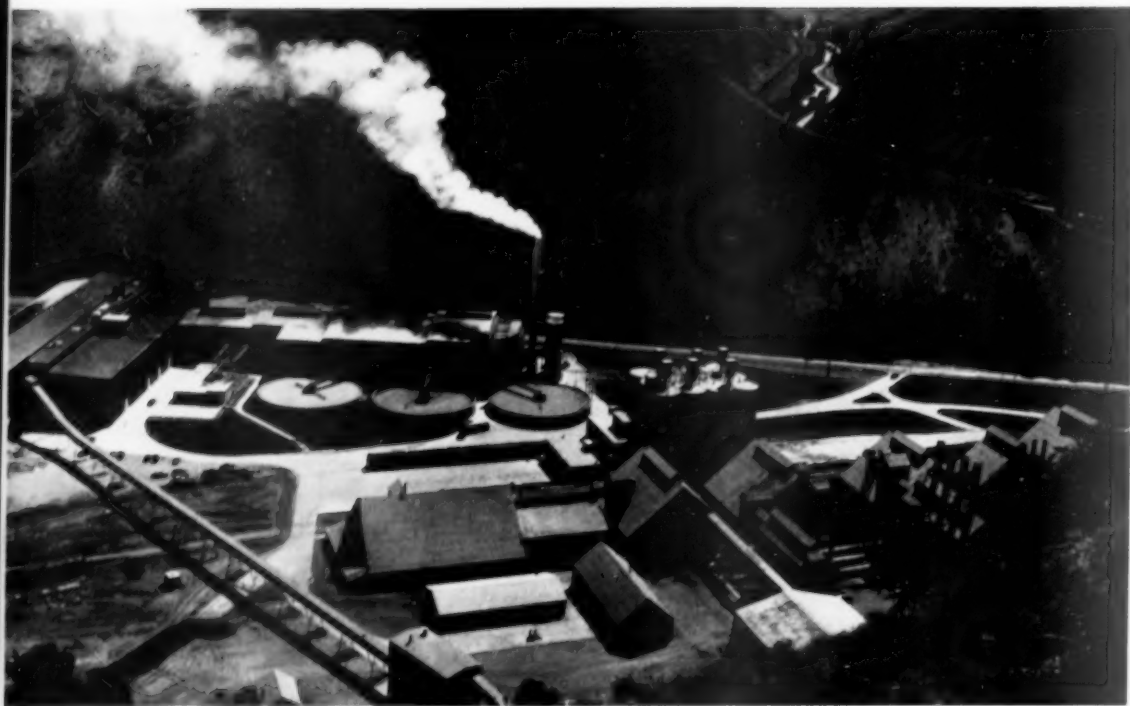
**O**NE OF THE HARDEST of the many hard facts of life that confront the producer of portland cement is the knowledge that he can't manufacture anything in his costly and infinitely complex plants except cement. Thus he operates on a rigid single-commodity basis in an economic system dominated by the idea that there can be no security without diversification.

Probably the worst by-product of manufacturing facilities that have only one primary product is a tendency for everything connected with them—men, machinery, methods and thinking—to become hopelessly static. In the ordinary, accepted sense the cement manufacturer never retools, never changes models, never takes on a new product or dumps an old one. He just goes on making the same old all-too-familiar material in pretty much the same old way decade after decade. Under such circumstances only a tremendous and inspired effort emanating from top management can prevent a "we did it that way 30 years ago" philosophy from setting in.

Ideal has benefited from just such an inspired effort, and nowhere in its entire complex structure are the results more evident than in the vital area of manufacturing operations. Here top management has wisely recognized the critical importance of keeping itself far enough above the mass of detail so that it can manage in the best and fullest sense. This has been accomplished without imparting any suggestion of Olympian remoteness to management and without any apparent throttling of the free and rapid movement of essential information between the lower and the upper echelons of command.

The operating department is headed by the vice-president in charge of operations. Reporting to him and responsible for production performance is the general production manager, through whom responsibility is channeled to regional production managers assigned to each of the three divisions of Ideal—Southern, Rocky Mountain and Pacific. Plant managers of the 15 operating units report directly to the regional production manager in their particular division.

The three divisions of Ideal are composed as follows: The Southern Division includes plants located at Mobile, Ala.; Baton Rouge, La.; Houston, Texas; Okay, Ark.; Ada, Okla.; and a terminal located at New Orleans. The Rocky Mountain Division includes plants at Superi-



**Ideal's Devil Slide plant** as seen from the mountain above the quarry

## Manufacturing operation

*continued . . .*

or, Neb.; Portland, Colo. (two); Boettcher, Colo.; Devil's Slide, Utah; and Trident, Mont. Making up the Pacific Division are plants located at San Juan Bautista, Calif.; Redwood City, Calif.; Gold Hill, Ore.; and Spokane, Wash.

**Plant organizations are set up** so that lines of authority and communication are clear and precise. In each operating unit only four men report directly to the plant manager: the chief clerk, the personnel supervisor, the maintenance supervisor and the general mill foreman. The latter is responsible for plant production and performance. Responsibility and authority radiate through these four individuals in accordance with very precise and logical definitions and understanding. As a result, any sort of buck-passing is something of a rarity and, furthermore, successful buck-passing is almost completely unheard of.

For fairly obvious reasons almost all of the activities of the operating department must be coordinated and synchronized with the activities of other departments. Production schedules, for ex-

ample, are planned meticulously to mesh with estimated requirements of the sales department, which keeps the general production manager informed as far in advance as possible of any unusual requirements for particular types of cement, or of requirements for tested cement. The sales department also determines priority of shipment, and the various operating units are always instructed accordingly.

There is also similar coordination between the operating department and the purchasing department to assure that each production unit will have adequate amounts of the proper operating supplies, fuels and repair materials. Practically all purchases are initiated from requisitions submitted by the plants and approved by the operating department. However, a few items are purchased locally by the plants, and such essential operating supplies as kiln liners and grinding media are bought directly by the purchasing department.

The various plant managers work directly with the traffic department on all matters that involve proper railroad equipment, demurrage payments,



**T. B. Douglas,**  
vice president,  
operations

**James Allen,** shift foreman at Ideal's Baton Rouge plant checks the No. 3 tire and trunnion on one of the plant's five kilns

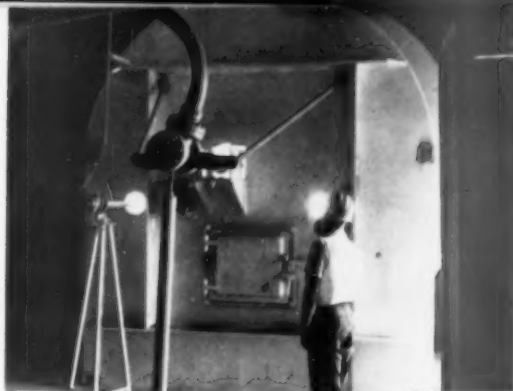
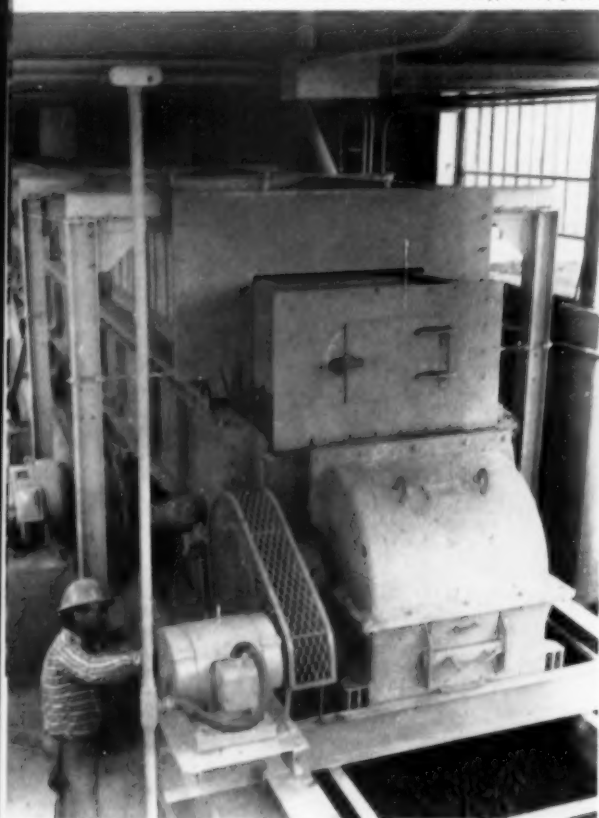


**Aerial view** of Ideal's Spokane plant with the Spokane river shown in the background

payments of undercharge bills on incoming shipments, or claims for damage on incoming supplies. The operating department works closely with the research department in planning for the improvement of product quality, and in the development of new products, test procedures and quality standards; and with the accounting department in all matters involving this important phase of modern business. And finally, in the important area of personnel relations, the plant managers work closely with the industrial relations director on all matters involving working conditions, group insurance and accident prevention.

The 14 producing units operated by Ideal include four dry process plants, nine wet process plants, and one unit at Portland, Colo., where both dry and wet processes are employed. Four plants (Mobile, Baton Rouge, Houston and Redwood City, Calif.) utilize oyster shell as their principal source of raw material. Quarries are operated in conjunction with the remaining ten plants to supply limestone and shale. Sandstone and iron ore are readily available at all plants for the manufacture of special cements. Gypsum is purchased from outside sources for all plants except those at Trident, Mont., and Boettcher, Colo.

Cooler man checks a motor bearing on end of a new cooler at Ideal's Okay, Ark., plant



George Underwood checks No. 5 kiln at Baton Rouge

## Manufacturing operation

*continued . . .*

The kilns in all the plants that comprise the Southern Division are gas fired. The dependability of the supply of this fuel makes it unnecessary to provide for additional fuel on a stand-by basis.

With the exception of the kilns at Devil's Slide, Utah, which are fired with coal, all of the units in the Rocky Mountain Division are gas fired and all have provision for stand-by fuel.

At Redwood City, Calif., and Gold Hill, Ore., in the Pacific Division, oil is used as the primary fuel, while the kilns at San Juan Bautista and Spokane are gas fired with provisions for stand-by fuel.

Most of Ideal's properties are operated on purchased power, with 11 of the plants entirely dependent upon an outside source of power. At Ada, Okla., and Superior, Neb., a portion of the power load is carried by company-owned facilities, and power for the entire operation at Gold Hill, Ore., is supplied by a company-operated hydro-electric generating plant.

In operating and maintaining these complex and widely-dispersed properties, Ideal's management places major emphasis on men. The most extreme care is taken in selecting and training supervisors, and hourly paid personnel are constantly scrutinized with this program in mind. While management is deeply committed to the philosophy of promotion from within, when necessary highly trained technical personnel are sometimes brought in from outside.

Equipment, of course, comes in for its proper share of attention in management thinking, and operating facilities are modernized or replaced whenever there is a clear indication that better results or better economy can be achieved. For example, the company has taken an interest in the gradual approach to automatic kiln operation.

The high mark of this development, at least as far as Ideal is concerned, has just been reached on the company's No. 5 kiln at Baton Rouge. Since the subject is of such wide and immediate interest, perhaps this installation justifies a description.

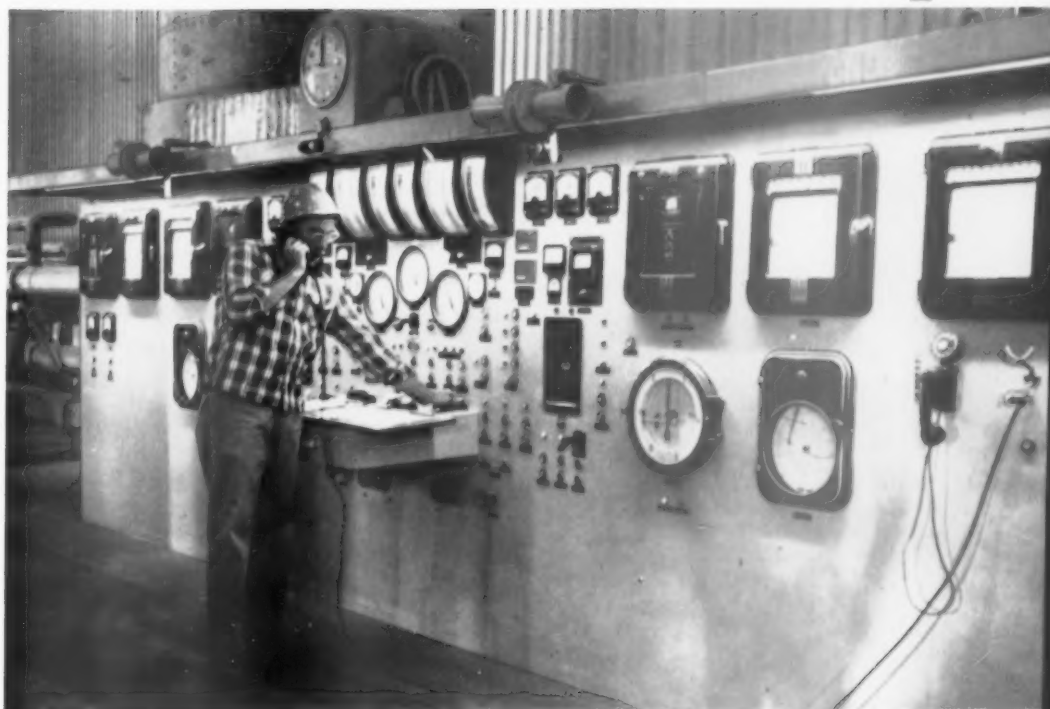
Four set points are used. The first is the exit gas temperature, with the preset value maintained by automatically resetting the kiln draft control point. The pressure controller measures the exit gas pressure and controls it to the level required by the exit gas temperature controller. The exit gas pressure is controlled by automatic positioning of the kiln draft fan louver. The controller is a two-speed floating unit. For small deviations the louver is moved in steps, while for larger deviations the louver is moved at the full speed of the drive motor.

The second set point is on the cooler pressure. This is kept at the preset level by a pressure controller which positions cooler vent stack damper.

The third set point is for the cooler temperature. A Ray-O-Tube, mounted through the cooler roof, actuates the position of the cooler fan louver.

The fourth set point is the burning zone temperature. Here a Ray-O-Tube actuates the valve controlling the fuel gas flow so as to maintain the desired temperature.





At the Portland plant, this extensive control panel is used in operating and burning the 400-ft. kilns.

Mounted on the kiln control panel is a 10-point recorder which furnishes an operating record of  $O_2$ , hood draft, exit draft, exit gas temperature, burning zone temperature, secondary air temperature, clinker temperature, fuel gas flow, ferris wheel feeder speed and kiln speed.

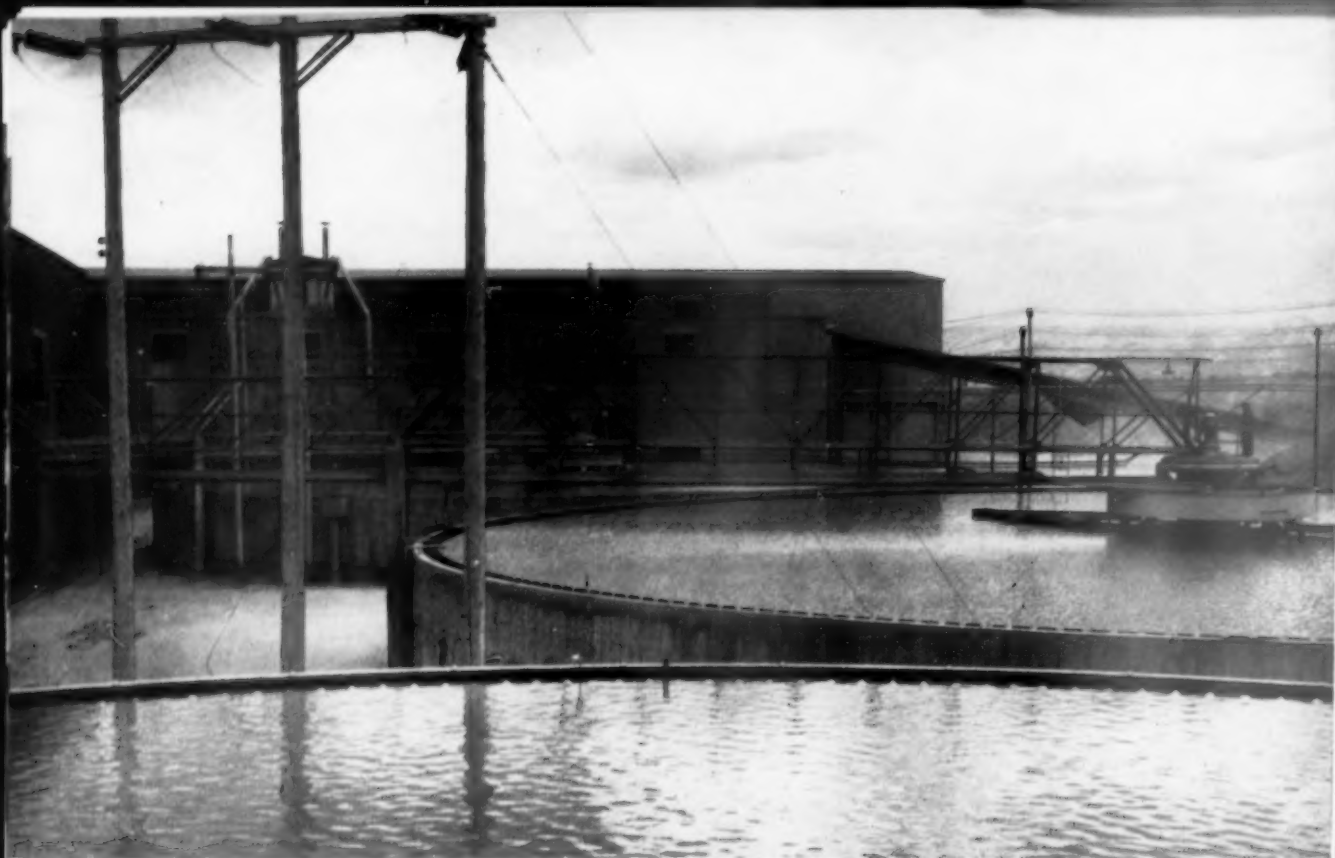
The amount of water in the raw slurry at Baton Rouge will be controlled by an Ohmart Corp. density gauge. The source unit, which contains radioactive cesium sulfate, and the detecting cell are mounted on the slurry line at the pump outlet. Since the amount of gamma-ray absorption varies with the slurry density (or solids content of the slurry) the signal from the density gauge can be used to control the water flow to the grinding mill. Experiments on one of the existing mills have shown that the time lag through the mill is too great for satisfactory control of water at the feed end of the mill. Therefore, the water stream has been divided so that about 75 percent of the required water will enter with the mill feed, and the balance will be added at a mixer just ahead of the slurry pump. The flow of the smaller portion will be automatically controlled by the Ohmart gauge. The slurry density will be continuously recorded at the centralized control panel, and the operator will have remote manual control over both water valves.

This is, of course, but one of many examples of management's consistent program of investing in

modern equipment, and parallels could be found in virtually every one of the 14 operating units. Like all modern manufacturing organizations, Ideal has had to put up a constant battle against rising costs.

This battle has been fought on a number of fronts, but the company believes that maximum progress has been made in 10 general areas. Listed, without regard to relative importance, they are: preventive maintenance program; careful scheduling of work forces; use of basic or magnesite kiln liners in kiln burning zones; effective dust collection systems; reconditioning of worn repair parts in machine shops; survey purchasing or purchasing of regularly used repair parts and operating supplies on a yearly basis; continual upgrading of all employees including careful training of all operating personnel; careful study of plant lubrication program including standardization of lubricants used on all equipment; use of low cost blasting agents in place of higher cost dynamite and use of modern rotary and percussion type drilling equipment in quarries.

Of the many company policies which have helped Ideal to become one of the major factors in the cement industry, perhaps none has helped more than the persistent habit of self criticism. In a fair number of large corporations management takes the view that it can do no wrong and is thus



**Slurry thinner tanks** outside the Portland plant. Three of these huge tanks remove excess water from slurry

## Manufacturing operation

*continued . . .*

deprived of one of the best means of improving its own performance.

There are a number of evidences in Ideal's present managerial setup that this basic error has been avoided. For example, top management recognized several years ago that its plant managers were not by any means always completely effective as managers. One immediate result was the decision to hold a plant managers' conference each year to turn the spotlight on the men responsible for carrying out company policies at the plant level. These sessions run from three days to as long as a week, and they may be held almost anywhere in the area served by Ideal plants. The dominant theme of the meetings has been the study of human relations, and two entire sessions, one at Stanford University and another at the University of Oklahoma, have been devoted exclusively to this important subject.

In such gatherings management has laid the groundwork for many of the policy decisions and much of the fine cooperation which have made it possible to keep Ideal from developing as a number

of loosely knit individual companies. Before this effort the 15 plants bought 17 different kinds of Babbitt metal, and this same uneconomic diffusion showed up on 1,000 other items — twist drills, files, belting and screw conveyors.

Central purchasing was, of course, the best solution to such problems, but the idea took selling, and progress was made only as the plant managers were drawn together into the broad picture of management. Complete standardization is still a future goal to be attained, but much has been accomplished. There seems no reason to doubt that eventually a screw conveyor used in Mobile will be just as serviceable at Houston.

**Ideal's engineering staff** at Denver numbers about 30 people, and there are in addition one or two engineers permanently assigned to each of the 15 plants. By far the vast majority of projects are handled by the Denver staff, although some very small jobs may be handled on local levels.

The engineering department is a staff organiza-

*Please turn to page 186*

## Ideal's maintenance program increases production, cuts repairs

**I**N A CONTINUOUS PROCESS MANUFACTURING PLANT, such as a cement plant, good maintenance is essential to economical and successful operation. Although the actual cost of maintenance (materials and labor) constitutes a sizable portion of the cost of making cement, an equally important factor resulting from good maintenance is the reduction of emergency breakdowns causing loss of production.

A few years ago most maintenance was handled quite haphazardly on the "emergency" approach. The philosophy, if any, behind this approach was to accept the fact of maintenance reluctantly and to operate equipment until it broke down, then repair it. In recent years preventive programs have received increasing attention and Ideal has adopted this approach to its maintenance problems. It is unlikely that emergency maintenance will be eliminated entirely, but a proper balance between preventive and emergency maintenance is needed. It is possible to have too much preventive maintenance, such as unnecessary inspection and repairs when records indicate longer service of wearing parts is possible.

In the cement industry there are a number of multicomponent systems. As the number of components increases, the system availability, or operating time, decreases rapidly as the reliability of each component decreases. For example, in a 10 component system, the system availability would be 90 percent if the component reliability were 99 percent. However, if the component reliability dropped to 95 percent, the system availability would be reduced to only 60 percent. Thus, component reliability must be maintained at a maximum to insure economical operation of a multicomponent system. An important factor in maintaining maximum component reliability is to make thorough inspections and necessary repairs to each component whenever the system is down.

Another reason for the increasing interest in having the best possible maintenance program is the steadily advancing cost of repair materials and labor. A small savings in either item, along with a corresponding increase in production, will result in noticeably lower costs.

Because of the many possible advantages of well-planned maintenance activities, Ideal started several years ago to develop a program. It was apparent that maintenance should be given the same attention as production. In fact, both of these phases of the manufacturing pro-



## Ideal's maintenance program

*continued . . .*

cess must be very closely correlated to obtain maximum production at minimum cost.

The first and primary requisite for a successful maintenance program is to have a good organization and adequate and properly trained personnel. A maintenance supervisor, reporting directly to the plant manager, was delegated the responsibility of managing the maintenance department under the new program. The objectives, or functions, are summarized briefly as follows:

1. Supervise the maintenance of all machinery, buildings, grounds and property.

2. Practice preventive maintenance.
3. Practice corrective maintenance.
4. Keep adequate supplies in the storerooms.
5. Keep an accurate and complete record of all repairs.

A typical plant's organization chart, insofar as the maintenance department is concerned is:

It may be noted in the chart that labor (under the yard foreman) required for clean-up and housekeeping (over and above routine clean-up of operating stations) is under the jurisdiction of the maintenance department. On this basis 40 to





Regular daily lubrication and inspection is a part of the maintenance program at all plants in the Ideal system



Curtis Prescott, storekeeper at Ideal's Mobile plant, checks inventory in the storeroom

45 percent of Ideal's people are employed exclusively in maintenance work.

A good maintenance program starts with proper engineering, design and layout of equipment. Much can be accomplished by properly engineering a new plant or new installation. Of course, simplicity of design is of prime importance to accomplish the safe, efficient operation that is required. Ideal has always kept maintenance in mind when engineering new projects.

After a careful review of various maintenance programs that were used in industrial plants, Ideal

developed a simplified system to carry out the objectives of the maintenance department as outlined in the foregoing paragraphs. This system was inaugurated early in 1954 and the forms used are discussed briefly as follows:

#### 1. Equipment record:

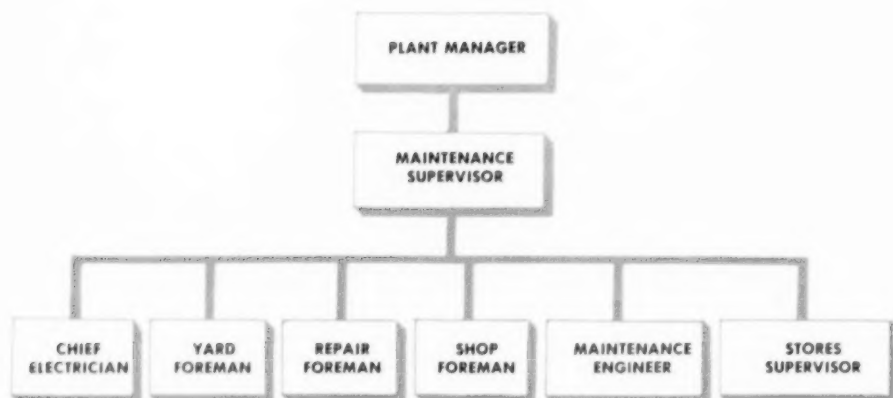
The basic form for this program is the equipment record which is prepared for each operating unit. A complete description of the operating unit is given on the equipment record with cross reference to auxiliary equipment. Each operating unit is identified by a number which gives the location, or department, and the number of the unit. The equipment record gives the manufacturer and the original cost of all individual pieces of equipment that comprise the operating unit. Motors are considered a part of the unit, but a separate record is kept on all motors.

#### 2. Job report:

The job report form is used so that information concerning the various repair jobs can be turned in to the maintenance supervisor. Job reports are used for major repair jobs, but not for numerous minor and some routine jobs. The job report is prepared each day for each repair job so as to have a record of the progress of the job. These reports are made in duplicate, one copy being retained in the foreman's personal records to help him in planning and scheduling future work.

#### 3. Maintenance record:

A maintenance record is prepared for each operating unit. It includes all materials and labor used on an operating unit, even though some repair jobs may not warrant a job report. The pur-



## Ideal's maintenance program

*continued . . .*

pose of this form is to give a detailed account of the materials required to keep each operating unit in repair.

### 4. Maintenance record summary:

After each repair job is completed, the information is summarized on the maintenance record summary. On this form, the costs of various commodities, such as electrical supplies, gears and pinions, bearings, steel and lumber are tabulated. This record is the payoff of the system and the one which gives the most valuable information. A recap of this summary is prepared each month and submitted to the general production manager for his review.

### 5. Motor record:

A motor record card is used to give a complete description of each motor and to program periodic inspections and record any repairs.

The review of the maintenance record summary has been helpful in scheduling periodic inspections, making minor adjustments or repairs and planning major overhauls. These records have also served for justifying capital expenditures, either for replacement of equipment or changes in design.

One of the objectives of the maintenance program is to keep adequate supplies in the store-rooms, for repair supplies originate at the plants and are priced and purchased by the general purchasing department headed by E. F. Saulsberry, general purchasing agent in Denver.

In 1953 a unique program for purchasing repair supplies was developed. It is under the jurisdiction

of the purchasing department. The objectives of this program, called "Survey Purchasing" are:

1. Provide means for eliminating all of the minor everyday purchases that are so costly and so wasteful in paperwork.

2. Minimize emergencies by providing minimum inventories of critical parts—but limit purchases to parts that are highly essential and critical to the continuity of operation of major production machines and equipment.

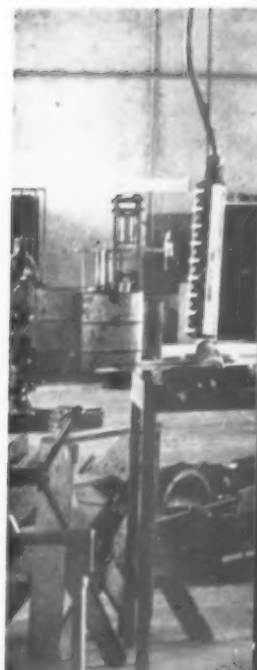
3. Create a system of standards to measure and control purchases for repair supplies.

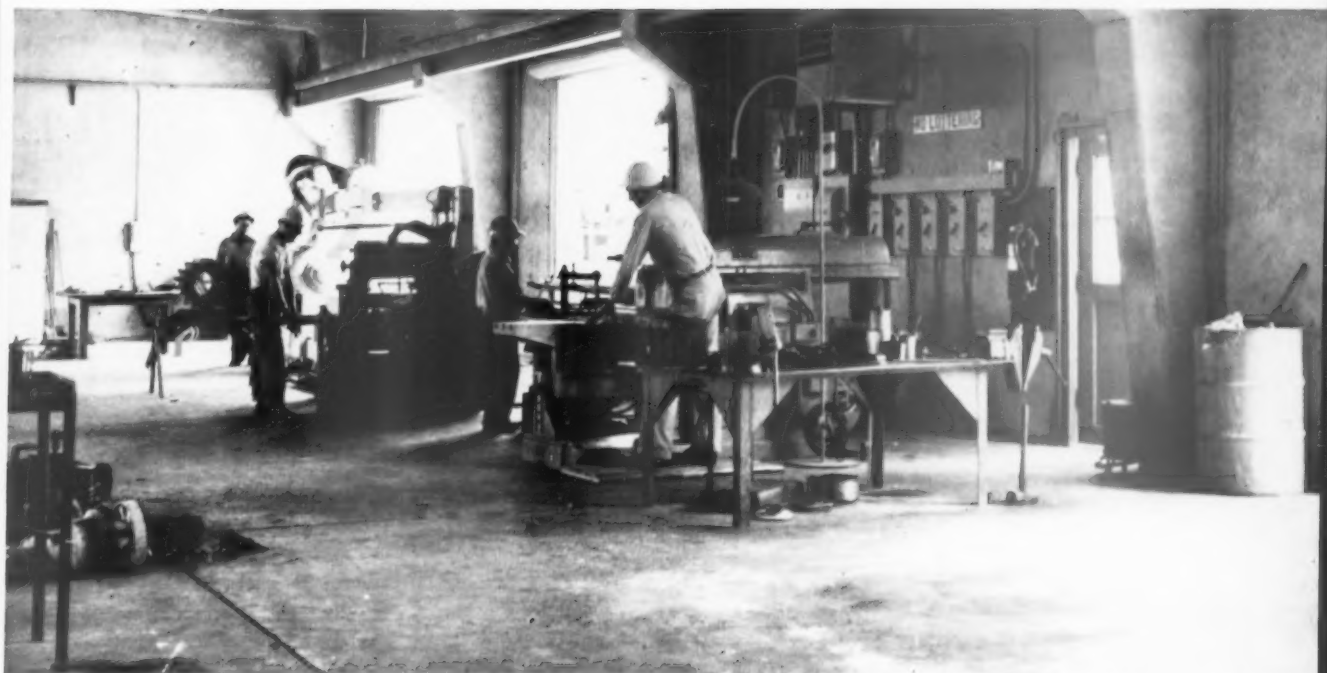
4. Balance inventories through elimination of overstocks of seldom-used items of repair supplies.

5. Standardize wearing materials in major applications and establish uniformity in repair supplies and materials carried in stock at all plants.

Survey sheets are prepared in the Denver office listing essentially all repair parts and giving complete specifications of these parts. Spaces are available to show the quantity on hand, minimum inventory, usage during the past 24 months and anticipated usage for the next 12 months. These survey sheets (some 800 to 1,200 for each plant) are mailed to the plants each spring, and the information outlined above is filled in. They are then returned to the purchasing department.

Routine supplies, such as bearings, steel, bolts and nuts, electrical supplies, dust collector bags and numerous other items, are ordered directly from the surveys. In most cases these supplies





**Clean shops are standard** at all Ideal plants. Here's a view of the machine shop at the company's Mobile, Ala., plant

are ordered for the next 12 months' estimated usage. Although the surveys are prepared for large costly parts and parts not regularly or continuously used, such as mill, kiln and equipment parts, these items are purchased only on a requisition basis. A careful inspection of each operating unit is required to determine the anticipated supplies or parts needed during the next 12 months.

The first surveys required considerable work as it was necessary to make complete inventories of all supplies, establish reasonable minimum inventories and to estimate the next year's usage. However, with each succeeding year less detailed work has been required as the records accumulate.

The company believes that its purchasing program has been outstandingly successful. Some of the measurable results:

1. Estimated 10 percent savings in the cost of repair supplies due to price negotiations, quantity discounts, surplus transfers and freight.
2. A substantial reduction in the total number of requisitions made.
3. Improvement of specifications and nomenclature on the various repair parts. In fact the survey sheets might be considered as a master parts book for each plant.
4. Less frequent calls for emergency items as more critical items are now carried in stock.

In the last three years a quota for repair supplies has been established for each plant early in

**Pete Boyd, lubrication maintenance man** at Portland, Colo., plant, greases cooler gear



Training sessions, such as this one led by maintenance supervisor Ben Huffman of Ideal's Houston plant, are held regularly



## Ideal's maintenance program

*continued . . .*

the year. These quotas are based on past experience and on the estimated production of the plant; i.e., on a per barrel basis.

Continuous inventories of grinding media, refractories and paper bags are kept in the general purchasing department's files and orders are placed for these materials on an automatic basis as inventories fall below certain pre-established minimum levels.

One other major advantage of the surveys has been the standardization of repair parts. In the growth of a company such as Ideal, in which other well established companies have been purchased or acquired, each plant used many items that might be only slightly different from items used in other plants. The surveys brought to light many instances where the same items could be used in all plants. Through standardization there has been a substantial decrease in the total number of items handled. Again this has resulted in savings by making it possible to purchase in quantity lots and by reducing the paperwork involved.

Another important phase of a good maintenance program is a good lubrication program. At Ideal the cost of lubricants is about five percent of the cost of repair supplies. The company's experience demonstrates conclusively that proper lubrication can reduce breakdowns; cost of repairs.

The lubrication program started with surveys

by the oil companies to determine the proper lubricant for each application. From these surveys and from the equipment lists, lubrication service charts were prepared listing the equipment, the lubricant to be used on each application and how often the part is to be lubricated. The charts serve as check lists to control the lubrication program. These surveys have resulted in the standardization of lubricants and a reduction in the number of lubricants at each plant. This has allowed more efficient purchasing and storage of lubricants and has also reduced the likelihood of misapplication.

In conjunction with the maintenance program, but also to improve plant appearance, Ideal has adopted a standard paint schedule which is used at all plants. This schedule includes paint specifications for all equipment, machinery and piping. In developing this schedule the American Standards "Safety Color Code for Marking Physical Hazards and the Identification of Certain Equipment" and "Scheme for Identification of Piping Systems" were used.

The basic color in this schedule is silver gray which is used on essentially all steelwork, including structural steel, bins, elevators and conveyors, dust collectors and duct work. Handrails and stairs are also painted silver gray, except for the top rails, end posts, and the top and bottom risers, which are painted yellow. Some of the other colors in this schedule: buff for ball mills (with black for manhole covers); light green for electric motors, starters, switches, load centers, instrument panels and machine shop machines; yellow for mobile equipment, such as shovels, cranes, locomotives, trucks and tractors; aluminum for feed end of kilns and kiln hoods; green for the burning zone of kilns; blue for electrical conduit.

Although the entire maintenance program as outlined has been in effect only a couple of years, results indicate that some substantial gains have been achieved. It is expected that refinements in the program and additional experience will result in additional savings and increased production.

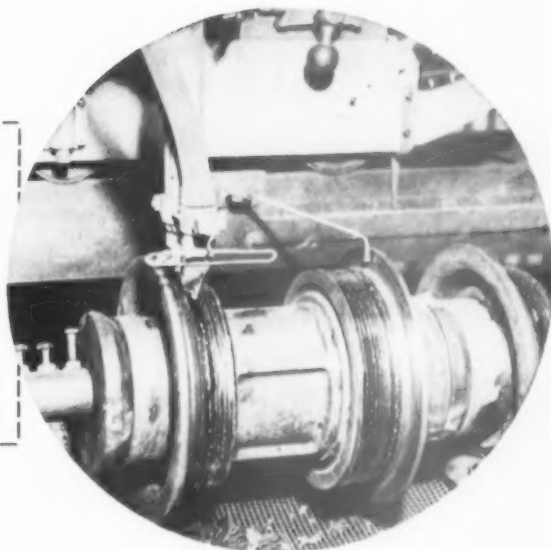
A recent evaluation of the program indicated the following improvements, comparing the years 1955 and 1956 with the years 1953 and 1954:

1. Due to a reduction in emergency downtime, overall production increased about three percent, which is equivalent to about 675,000 barrels.
2. Even in view of additional demand for production, emergency repair overtime decreased about 25 percent.
3. In spite of the increased cost of repair materials and labor, the overall maintenance costs increased only about three percent.
4. Even though prices increased, the cost of lubricants, on the basis of barrels of cement produced, was reduced slightly.

*Please turn to page 129*



## Does it pay to **REBUILD TRACTOR ROLLERS?**



*here's one answer...*

**This is a report from one of the country's largest tractor maintenance shops having complete facilities for crawler reconditioning. It particularly concerns rebuilt track rollers, a major item of wear. In this shop rollers are regularly rebuilt and hard-faced by the automatic electric welding process, using Stooddy 105 on the running surface and flange.**

About a year ago a tractor came into the shop for overhaul. The rollers were badly worn; those found suitable for rebuilding were returned to size with Stooddy 105 and the internal assemblies thoroughly reconditioned. The balance of the rollers were discarded and replaced with standard parts. Following routine procedure, the shop foreman checked the entire crawler assembly to insure proper alignment—a *highly important factor in reducing needless wear*. After 2500 hours this tractor came in again for its customary overhaul. Inspection of the rollers disclosed the following:

**The standard rollers, without exception, were worn from  $\frac{3}{8}$ " to  $\frac{1}{2}$ " on the running faces; in all cases the internal assemblies required several replacement parts.**

**Hard-faced rollers showed negligible wear on running surfaces and the only replacements needed were new seals for internal assembly.**

It is of course an accepted fact that rollers rebuilt and hard-faced with Stooddy 105 by the automatic method give a service life considerably beyond that of standard replacements—at a much lower cost. The hard-faced roller with its superior abrasion resistance reduces uneven wear on the track rails by providing a smooth,

even working surface that allows free movement of the rails and resists grooving of the roller. Hence, wear on the internal roller assembly is also decreased.

*Stooddy 105, the alloy used in this application, was the first automatic wire of its type and is today the alloy generally preferred by principal shops. It has been proven by eight years of actual field use—assurance of maximum service life at reasonable cost.*

Earth-moving contractors operating large fleets of tractors, shovels, buckets and crushing plants often find the installation of an automatic welding head a profitable investment for rebuilding rollers, idlers, house rolls, crusher rolls and similar wearing parts. Many contractors, however, prefer to send such work to a thoroughly equipped automatic job welding shop of which there are a number located throughout the country. *A list of these job shops is available on request.*

Complete information on automatic hard-facing installations and procedures will gladly be supplied—without obligation. You may consult your local Stooddy dealer—see the "yellow pages" of your phone book under "Welding Equipment and Supplies"—or write direct.

### **STOODDY COMPANY**

11929 E. Slouson Avenue, Whittier, California

Enter 1073 on Reader Card

# KENNEDY MACHINERY

*at home...*

**B**uilders of the world's most modern cement making equipment . . . for wet or dry process . . . designed to produce peak capacities at lowest maintenance costs. Our engineers available for consultation at any time or, send for bulletins describing Kennedy Cement Making Machinery and Equipment.



COPLAY CEMENT MFG. CO., COP-LAY, PA. Dry process cement plant. 3000 bbl. per day increase in capacity, a part of Coplay's expansion and modernization project. Note GRU-DEX Pre-heater in background.



TEXAS PORTLAND CEMENT CO. 1500 bbl. per day wet process cement plant. Recently put into operation at Orange, Texas.

# Y and EQUIPMENT

*or abroad...*

LAKE ONTARIO PORTLAND CEMENT CO., PICTON, ONT., CANADA. New, modern 5000 bbl. per day dry process cement plant now under construction. Scheduled to go into operation, October, 1957.



GRESIK CEMENT PLANT, INDONESIA. New, 5000 bbl. per day wet process cement plant. Scheduled to start operation, June, 1957.



## KENNEDY PRODUCTS

- Gyratory Crushers
- Swing Jaw Crushers
- Slugger Rolls
- Ball Mills
- Vibrating Screens
- Rock Feeders
- Air Swept Tube Mills
- Rotary Kilns
- Coolers, Dryers
- Preheaters, Deheaters
- Fans, Blowers
- Hoists, Conveyors
- Classifiers
- Pneumatic Transport Systems
- Dust Collectors
- Complete Cement Plants
- Complete Lime Plants
- Waste Heat Boilers
- Pulverized Coal Firing Systems

# KENNEDY-VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION  
TWO PARK AVENUE, NEW YORK 16, N.Y. • FACTORY, DANVILLE, PA.



Two Macks—one driver. One truck is on the move while the other is being loaded, for fast cycle operation from quarry to crusher.

## "Our MACKS guarantee our production"

"Our stone-crushing operation is automatic, and to get full use out of it, we need trucks that can maintain a tight production schedule," reports Mr. Alexis Dyer who, with his brother Frank, owns and operates a 300-acre stone quarry near Reisterstown, Maryland. "And believe me, our 2 Mack LRR dumpers have done it, in spite of the rugged terrain they have to cover from loading to dumping."

The Dyers' Macks are loaded at the far end of the quarry with a 17 or 18 ton load. Then they cross the rocky, pock-marked bottom of the quarry, plowing their way through waterholes two feet deep, and climb a steep quarter-mile

grade to the crusher.

The ability to maintain a tight schedule over this jarring terrain would be a harsh test for any truck. In fact, the Dyers' previous trucks broke down frequently, seriously handicapping their output. Now, with their Macks, the Dyers experience no trouble maintaining their schedule. A full day's production for the two Macks averages 1500 tons, with each truck using only 15 gallons of fuel per day.

James Williams, who drives these two Macks, likes their maneuverability. "They drive very well—no trouble at all," he says. "Another thing I like is that there is much less shifting than there

was on our other trucks, which means I'm much less tired at the end of the day—even though I make 80 round trips daily from the quarry to the crusher."

The Dyers are enthusiastic about their Macks and are planning to purchase another one in the near future. If you need help with a heavy hauling job, why not see your nearest Mack representative for full information. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

**MACK**  
first name for  
**TRUCKS**



## Research finds solutions to technical, business problems

**I**F A SINGLE PHILOSOPHY can be said to dominate the thinking of Ideal's top management these days, that philosophy stems from a firm belief that all important decisions must be based upon a long-range point of view rather than upon immediate expediency. Convinced that successful management must always be looking ahead, the company in 1952 opened its own laboratory for technical research. It is located at Fort Collins, Colo., adjacent to the Boettcher plant.

The activities of the research laboratory come under the supervision of the vice-president for administration—a reflection of management's conviction that research properly belongs in the business-getting end of the organization.

The laboratory at Fort Collins seeks continually to upgrade the quality of Ideal products and find more economical methods of manufacturing. There is a great deal of "applied research" on mix design, directed at improving uniformity and general performance.

Since it is equipped with small kilns, grinding mills and other units of equipment for making portland cement, the laboratory is well able to seek solutions to production problems. When the company faces a chronic problem in connection with production, management is asked to appropriate money for a research project, and eventually a systematic study is undertaken by the laboratory.

From a functional point of view, however, the laboratory's main day-in-and-day-out purpose is to handle problems in the realm of chemistry and chemical engineering which are too hefty for the various operating units to tackle with their 6 to 8-man departments. Although assignments of this sort are regarded as routine, they account for an important share of the available man-hours in the Fort Collins laboratory. Another routine function has to do with the making of chemical analyses of samples of raw materials obtained by the company's exploration department.

There is probably some room for debate as to whether all these activities come strictly under the heading of research. But they have an unmistakably catalytic effect upon progress throughout the Ideal organization, and the company has no impulse to worry about whether the correct label has been applied.

There is probably no such thing as a "typical" year in the kind of



Both of these kilns are part of the pilot plant at the Boettcher research center

## Research finds solutions

*continued . . .*

research laboratory Ideal operates. This is partly because there is really no limit at all in the variety of work which the laboratory may be called upon to do to further the interests of the company and its customers.

Based on man-hours of effort, in 1956 the laboratory schedule fell into the following broad pattern: About 16 percent applied research; about 15 percent on exploration for raw materials; about eight percent on activities connected with trade associations; almost 60 percent on varied experimentation. That last bracket covered such major projects as comparative studies of masonry cements, slag cements, and foreign clinkers, as well

as a vast amount of work designed to find and correct the causes of poor performance of concrete.

If these projects are not earthshaking, they nonetheless make a definite contribution to the broad program of the Ideal Cement Co. In management's view, the research laboratory has unmistakably won its place in the system.

**BUSINESS RESEARCH.** In line with the company's belief that nothing should be left to chance that can be anticipated, Ideal recently established in Denver an entirely separate department for the purpose of conducting business research studies. Before this important step was taken, market



**William P. Whitney** using X-ray diffraction machine to identify mineral

research studies were undertaken rather casually by the sales department, or conducted on a contract basis by outside consultants.

The first full-scale project undertaken by the business research department was a broad study of the Pacific northwest. About four months of primary effort went into the job, and every imaginable source of information was drawn upon. Here are some of the types of information contained in the final report which was submitted to management: Population statistics; data on cement consumption back to 1920; data on raw materials in the area; labor rates; fuel and power costs; transportation facilities and rates; information on navigable waterways.

The exhibits which accompanied this report have been carefully filed, and as new information becomes available, it will be added to the file so that the study will remain current as long as management wants it to. The information contained in the report has already been a factor in important management decisions involving the development of company properties in the Pacific northwest. As the market potential in this area follows the expected pattern of growth, up-dated versions of the original study will undoubtedly form the basis for many major decisions in the years ahead.

One of the major projects currently being worked on is a company-wide study of systems and procedures. Paperwork throughout the entire organization is being reviewed critically with the purpose of cutting it to manageable proportions.

This important job is being handled primarily through a committee consisting of representatives



**William Johnson**, head chemist at the laboratory, running a chemical analysis

of each major department in the Denver office, with the business research department coordinating the whole effort. Eventually, of course, the work must fan out into the various plants, by having members of the committee go out into the field, or plant representatives come into the Denver office. It is expected that this project will be extremely active for at least a year, and then continue for some time on a reduced level.

One of the anticipated long-range results of the study of systems and procedures is still in the dream stage. It's the notion that perhaps some day the mountain of raw data collected by each of the plants in the system might be teletyped into the Denver office, and the whole complex job of calculation, correlation and analysis completed there. A setup of this kind would involve having specially trained personnel in a well-equipped computing center and would permit almost any type of analysis of operating information to be made on very short notice.

The study committee has investigated the operation of somewhat similar systems in other types of businesses, and the belief prevails that there is no serious obstacle in the way of establishing a computing center at Denver.

The more immediate target of the committee on systems and procedures is to bring the entire organization under one master system. For example, at the moment there are many differences in the collection and recording of basic information in the various plants, and similar differences are evident among the several departments of the company. It is believed that most of these differences serve no useful purpose and that they hamper achievement of important objectives.

Reduced to its simplest terms, the business research department has only one real function—to supply management with the best possible information on as current a basis as possible on which it may base its decisions. There can be no limit to the areas of information which must be explored in this kind of assignment.

*Please turn to page 133*



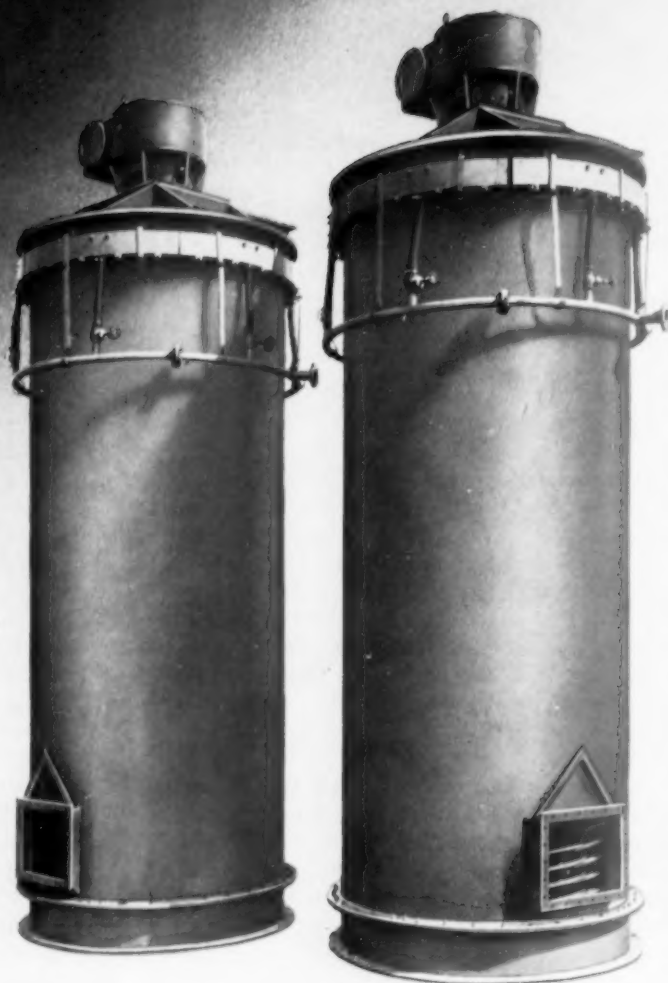
# SMIDTH

## cement coolers

The Smidth Cement Cooler, developed especially for cooling hot cement to temperatures acceptable for bulk shipment or immediate bagging, is externally water-cooled. The hot cement is introduced at the base and conveyed in a thin layer along the cooled interior surface to the top, where it is discharged. High cooling efficiency is assured by the intimate contact of cement and the water-cooled surface.

The Smidth Cooler may also be used with many other similar dry pulverized materials.

*Illustrated here are two 6' 6" dia. x 17' 7" high Smidth Coolers ready for shipment.*



**F. L. Smidth & Co., A/S**  
77 Vigenlev Alle  
Copenhagen, Denmark

**F. L. Smidth & Cie France**  
80 Rue Tailbout  
Paris (9e) France

**F. L. Smidth & Co.**  
Engineers and Machinery Manufacturers  
11 West 42nd Street  
New York 36, N. Y.

**F. L. Smidth & Co. of Canada, Ltd.**  
11 West 42nd Street  
New York 36, N. Y.

**F. L. Smidth & Co., Ltd.,**  
105, Piccadilly,  
London, W. 1, England

**F. L. Smidth & Co. (Bombay) Private Ltd.**  
42 Queen's Road  
Bombay, India





## **Ideal's industrial relations policy: keep employes informed**

**O**NE OF THE BUSIEST—and newest—departments in Ideal management's family is the industrial relations department. "Service" is its slogan. It handles myriads of problems on four separate, but related, fronts—Safety, Labor Relations, Personnel and Communications. The last of these includes the well-turned-out company magazine, "Ideal Cement Mixer."

Nothing is too small or too big for this department to handle, if it is in its area of operation. It helps to straighten out the smallest complaint of an individual employe, and it sets and supervises one basic and 27 local labor-management agreements with 11 international unions. It pays attention to every bruised finger, and it runs a big safety program that made the company No. 2 among all multiplant companies in the cement industry in 1956. It recruits labor, and tries to keep employes happy. It operates the equivalent of a good-sized insurance company. It trains, negotiates, compiles statistics, supervises, sets policy and publishes—and keeps a complete record of everything.

The driving force behind the department is F. N. Price, who carries the title of industrial relations manager. He has a lot to do, and he has gathered around him some able men to help. R. E. Bacon is labor relations manager for the company's central and southern regions. R. E. Hussey handles the same work for the Pacific region. Both are responsible for safety and training in their respective areas. Working directly under Mr. Price as personnel supervisor is S. J. Houlihan. Ted Johnson is editor of the company magazine. These men team together to provide the service that employes, as well as management, want.

Ten years ago, when Mr. Price went to work for Ideal, the load of labor relations work was on the shoulders of President Dobbins, M. O. Matthews and T. B. Douglas. The company had just completed one phase of expansion, and was going into another. Number of plants grew and the work load jumped to the point where Mr. Dobbins felt the need to delegate responsibility. Mr. Price was appointed to take over the labor relations work, which he knew inside out because of long experience in that field. At the same time, it was decided to expand the company's safety program, and a specialist—Mr. Bacon—was brought in as safety director. Company records were meager before 1947, but these men began the following year a system of keeping tab that has proved valuable.



## Industrial relations

*continued . . .*

The company kept on growing, and so did its safety, labor relations and allied responsibilities. After much thought, Mr. Dobbins on January 1, 1956, created the industrial relations department and placed Mr. Price at its head. "It is advisable," said Mr. Dobbins at that time, "to bring together in one place all of the many records and matters which bear on our employe relations." This move centered records and functions, formerly scattered among the many departments of the company, in one spot with a central authority. It was a streamlining move that has paid dividends.

**SAFETY.** Ideal's philosophy on safety provides the spring that makes the program tick. "We believe that there is no job so important that it

can't be done safely," Mr. Price points out. In this, he echoes the feeling that stretches all the way from top management down. The company believes that safety should receive as much attention as production. Its record proves it.

Attitude isn't the whole of it, for at Ideal it's backed up by action. The company provides what it believes to be the safest working conditions possible. It has a good house keeping program going that's hard to beat. Management gives all the backing it can, because it believes firmly that cleanliness and order promote safety and efficiency.

**Interplant safety competition is accented,** to help instill safety-consciousness in every employe. Originally, Ideal established the Charles Boettcher Annual Safety Award (named after the company founder), which was given to the plant that showed best plant improvement in safety in any one year. That award so stimulated safety activity



A pair of safety glasses are fitted on employee Murl Turley by J. R. Gwin. Ideal provides safety glasses free to all employees.

Otto Lythgoe of Ideal's Devil Slide plant examines the hat which probably saved his life when he was struck by a piece of limestone.



The "flying dust pan." Sweeper operator Louis Kornella cleans up the paved yard at Ideal's Portland plant with his motorized sweeper.

Employees of Ideal's Redwood City, Calif., plant enjoy an all day barbecue at a celebration in honor of working safely through an entire calendar year.

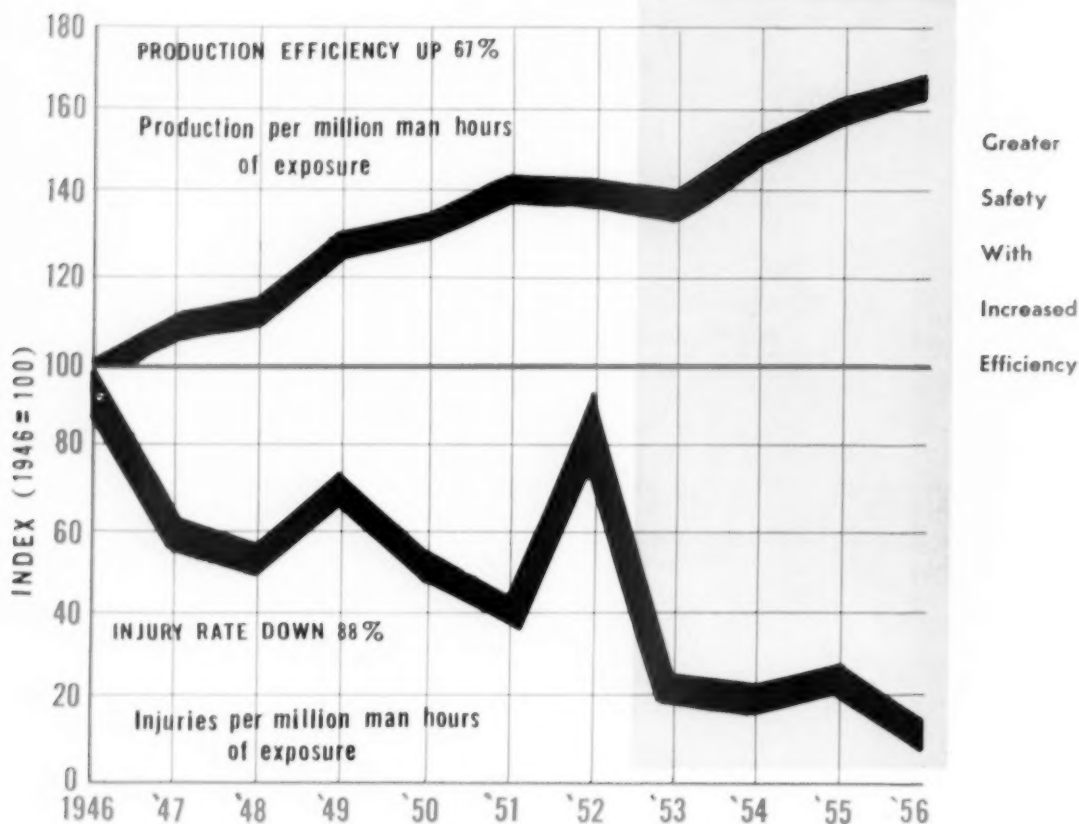
and thinking that its presentation soon went to the plant that recorded no lost-time accidents during a year. Now, if a plant works two accident-free years, the award becomes permanent.

Accidents fall into three categories at Ideal: (1) first-aid cases; (2) reportables—those commanding a doctor's attention but not involving lost time; and (3) lost-time or disabling injuries. Every employee reports for first aid in case of any injury, no matter how small.

First-aid cases are not considered reportables for the simple reason that employees are serious about safety performance, and the company feels that some would not report for aid if they felt the injury would go into the plant records. "We want them to feel easy about reporting for first aid," says Mr. Price.

Reportable accidents get a lot of study by the industrial relations department, because they feel that such study will show up weaknesses in the program. As an example, such a study led to the





## Industrial relations

*continued . . .*

institution of Ideal's safety glasses plan at all plants. It revealed that, at one time, one in three of all reportable accidents involved eyes. Of course, safety goggles became standard equipment at all plants—and management supplies them. Ideal is probably the first in the industry to make wearing of goggles mandatory. Mr. Price is convinced that Ideal "is saving eyes by the dozen" with the plan.

There's much more that can be said for the company's safety program, but the management knows that results count. To date, eight Ideal plants are proud possessors of the Boettcher Award—permanently. During the past 10 years, five plants passed the 1,000-day accident-free mark.

Ideal has proved by a 10-year record that it is possible to get increased efficiency in output and greater safety at the same time. An accompanying chart (shown above) shows that in the 1946-1956 period output per million man-hours has jumped 67 percent while the injury rate on an exposure basis has tumbled 88 percent. Chart on

page 140 shows startling accomplishment of Ideal's safety record for the past 10 years. The calculated cumulative number of injuries saved in a decade of accent on safe work is an astounding 800. This assumes that the 1946 injury rate (production basis) held during the entire period, and the saving is due to the improvement in the record. In addition to the most important benefits in reduction of human misery, lost time and direct cost, the company saved an estimated three-quarters of a million dollars in lost output alone. Surely, Ideal can say that "Safety Pays."

**EMPLOYEE RELATIONS.** Ideal believes that there is a community of interest between the company and the employee. If the employee is to prosper, the company must prosper, too. And it works the other way 'round; fair treatment of employees on the part of the supervisory staff leads to a feeling of joint enterprise. This attitude creates an improvement in worker morale, and employees become company boosters. It shows in the office and in the plant—everybody's an "Ideal" man.

Concentration of the personnel, safety and labor relations sections into one department last year

*Please turn to page 138*



# HAULS 4,000 TONS OF ROCK DAILY ERROR

This ad, which appeared in June 1957, contains an obvious error. The 4,000 tons mentioned was the total amount hauled daily by all three Rear-Dumps... not the amount per machine. LeTourneau-Westinghouse Co. believes in truthfulness and integrity in its business dealings with its customers and prospects. In keeping with this policy we offer our apology for this misleading statement.



Tournapull operator backs Rear-Dump up to edge of crusher, and flips electric hoist-switch. As body raises, rocks are dumped fast and safe. Body swings below and behind rear wheels, so rocks cannot obstruct wheels.

An abundant supply of base material was vital to Broce Construction Co., Dodge City, Kansas, when they began putting an 18" base on a 10-mile section of highway. Nelson Bros. Quarries, La Harpe, contracted to supply Broce with more than 400,000 tons of stone and sand for necessary base material. In order to maintain the continuously high rate of aggregate production needed, Nelson Bros. relied on their 3 high-speed, 22-ton LeTourneau-Westinghouse C Tournapull Rear-Dumps. These fast-stepping haulers high-balled material from pit to crushing

plant... hauled 4,000 tons of blast-rock daily per machine.

**Average 22 tons of rock per load**  
At Nelson Bros.' quarry, 3 mi. northwest of Reading, C Rear-Dumps worked with 2½-yd. shovel. Their short 90° turn radius enabled operator to maneuver machines easily, and spot fast under dipper. Each L-W Rear-Dump was loaded with 22 tons of blast-rock in 1¼ min. Rear-Dump's wide 8'9" bowl, with low rear-entry, provided large, easy target area for shovel operator... reduced spillage and clean-up. Since shovel operator did not have to "lift" dipper high to get in and out of bowl, he saved valuable time on bucket's swing-cycle. This, plus time saved in hauling, maneuvering, and dumping, enabled Rear-Dump to make more round-trips... haul more tonnage per working day.

switch on control panel to activate hoist-motor and raise body. As bowl tilted, it swung discharge lip below and behind rear wheels... kept rocks from slipping underneath wheels as Rear-Dump fed load directly into crusher.

## "These machines beat anything"

Supt. Carl A. Nelson reports his Tournapull haulers work profitably and efficiently. He said, "We have had excellent service from our Rear-Dumps. They haul from quarry pit to crusher, and have to take abuse on that type of work — but they are plenty rugged to take it." Nelson added, "They have plenty of power... can say we've had trouble-free service. We've worked all winter, in all kinds of weather. We can always depend on quick, easy starting on coldest days. These machines beat anything I've seen."

## Big brakes add safety on downhill hauls

'Pulls' multiple disc air brakes on all 4 wheels provided 3,762 sq. in. of braking surface for safe hauling on down-grades. At crusher, operator swung in fast... set rear-wheel brakes... and touched electric

## Heavy-duty haulers for tough jobs

For rugged, heavy-duty haulers to handle those tough jobs at your quarry, investigate the advantages of Tournapull Rear-Dumps. They take rough treatment... give you continuous high production. Call or write us for complete details.

Tournapull—Trademark Reg. U.S. Pat. Off. CR-1195-Q-6



Note big 22-ton rock load in heavy, welded-steel Tournapull Rear-Dump body. On this rugged pit job machines successfully withstood much of this hard pounding.



**LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS**  
A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT



The PCA safety trophy won by Ideal's Ada, Okla., plant



## Industrial relations

*continued from page 136*



Good housekeeping extends even to cement barges. Here, a cement barge is washed down to remove dirt



The Charles Beettcher annual safety award

has helped all the way around. Responsibility is focused into one spot, and the handling of any facet of employe relations has become more prompt.

The personnel section of the industrial relations department is headed by S. J. Houlihan, who is directly responsible to Mr. Price. Work in the section is divided into: (1) employment—recruitment, indoctrination and record keeping; (2) employe services and benefits—pensions, insurance, workmen's compensation; and (3) wage and salary administration—policy, job studies and grading of employes.

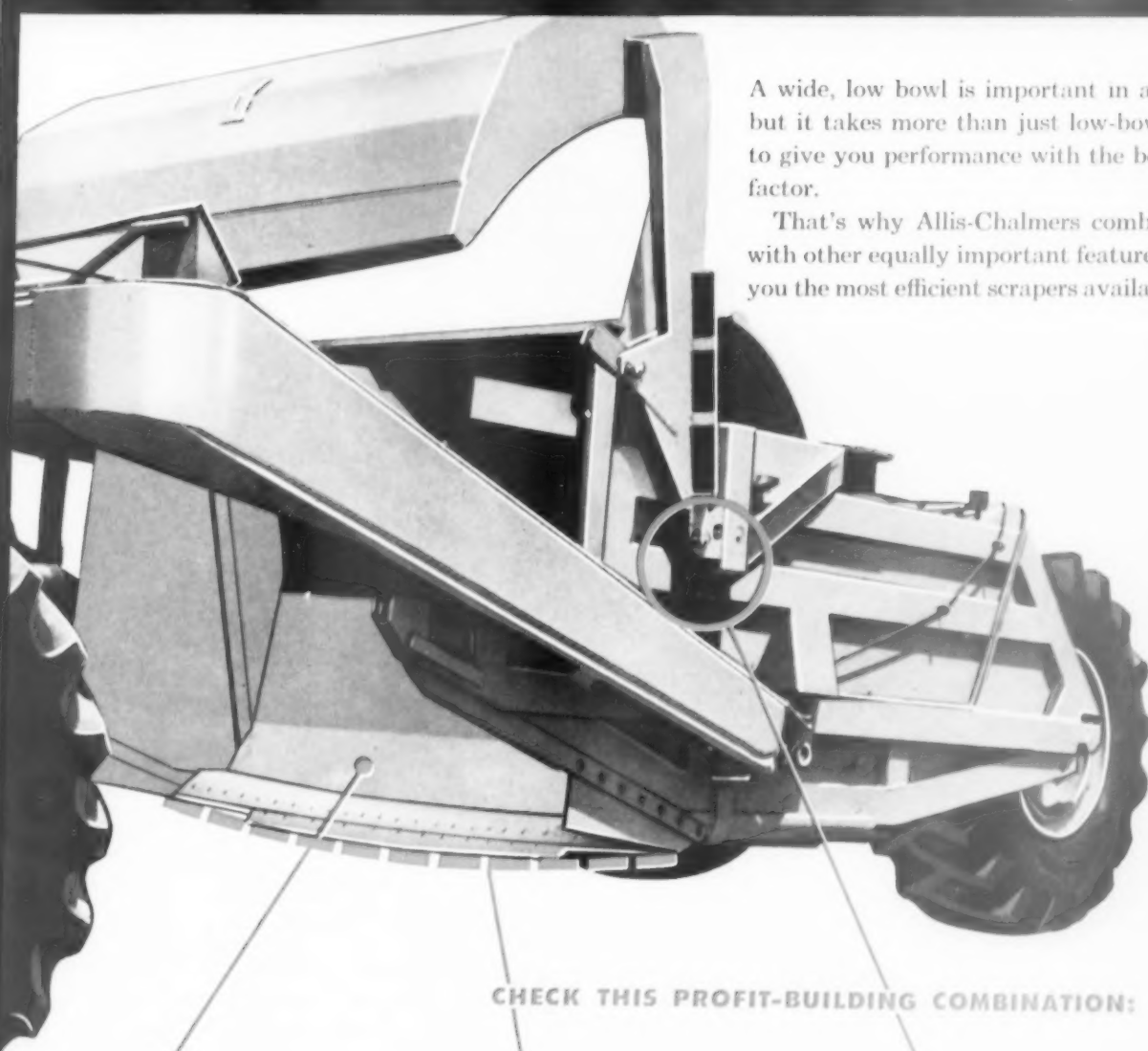
Each section head of the industrial relations department works closely with the regional production managers and the plant managers. The latter are responsible for the day-to-day personnel, safety and labor relations problems at their respective plants. Each plant manager has as an assistant a personnel and safety manager, who recruits and trains employes. Final decision on employment rests with the plant manager, however. At the Denver office, the industrial relations department recruits and interviews prospective employes but does not hire. That is left to department heads.

A new employe is thoroughly indoctrinated in his job and in his company before he turns a hand. Management wants each to know what his company is, what it does, how it does it, its position in the industry—all the facts that a new man should know about his employer. He is given a booklet called "The Ideal Way," which explains even the processes involved in manufacturing cement. Then, he is taken to his job and told what he is to do, and the proper and safe way to do it.

The labor relations section of the industrial relations department handles a big job at Ideal. It negotiates when necessary one basic labor-management agreement and 27 local agreements with 11 international trade unions. It handles from 26 to 35 different wage scales. Most company hourly employes (95 percent) are affiliated with the United Cement, Lime and Gypsum International Union. Due to the widespread locations of company plants, it is likely that Ideal's hourly rate is the highest among multiplant cement companies.

*Please turn to page 140*

# The Low-Down on Low-Bowl Scrapers



A wide, low bowl is important in a scraper, but it takes more than just low-bowl design to give you performance with the best profit factor.

That's why Allis-Chalmers combines this with other equally important features to give you the most efficient scrapers available.

## CHECK THIS PROFIT-BUILDING COMBINATION:

1.

Low, wide-bowl design for fast, heaped loading.

2.

Curved bowl bottom and offset cutting edge for faster, easier penetration and live, boiling loads that fill every corner of bowl.

3.

Patented apron-ejector linkage combines high apron lift with positive, forward forced ejection—permits either quick, complete dump or smooth, even spreading.

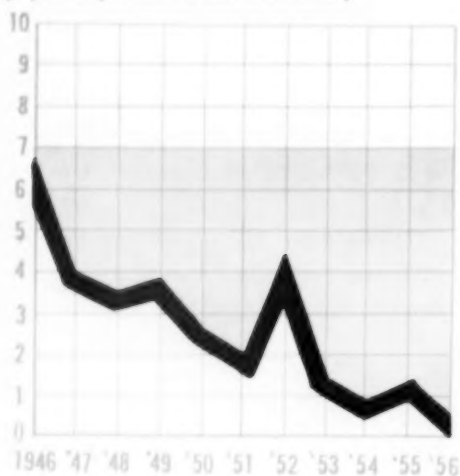
Your Allis-Chalmers dealer will be glad to discuss these and many other profitable advantages with you. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

**ALLIS-CHALMERS**

*Engineering in Action*

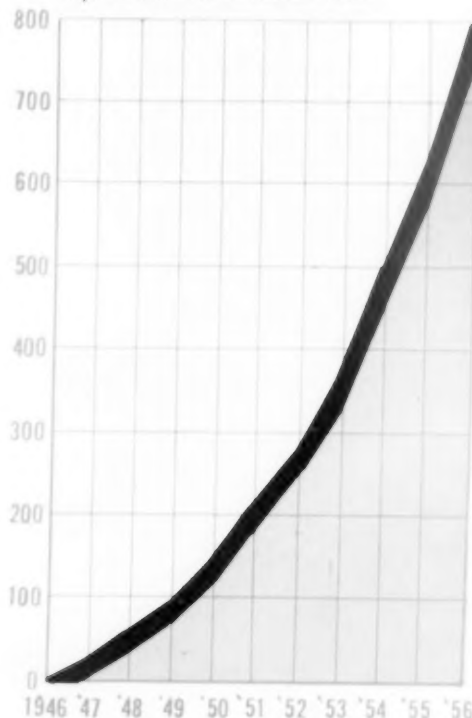
## 10 YEAR NET SAVINGS IN LOST-TIME INJURIES

Injury rates per million barrels annually



SAVED: 795.8 Injuries

Calculated cumulative number of injuries saved from 1946 to 1956\*



\* Assuming 1946 rate per million barrels maintained

## Industrial relations

continued from page 138

The pattern for many years in collective bargaining at Ideal was to negotiate a separate contract for each plant. In 1950, the company helped to negotiate a single agreement that covered most things that are common or basic to each plant. That agreement still stands as such, and is known as the "Basic Agreement." Following settlement of the basic contract, a separate one is negotiated at each plant to cover specific things that apply to the individual plant.

**Consolidation of various functions** into the industrial relations department has helped particularly to make available statistics that are important to labor negotiations. "In this business," Mr. Price says, "you have to know where you're going." When union demands are made known in any negotiation, the industrial relations department figures in advance the absolute cost of those demands before they're put into effect. These calculations are extended, on the basis of cost-per-hour increase, to show what the total increase will be, the percent of increase and the cost per barrel of output.

Plant managers and assistants are schooled in labor relations through the efforts of Mr. Price and his two assistants, Messrs. Bacon and Hussey. They hold plant managers' meetings on the basic

philosophy of "getting along with people" as well as the interpretation and administration of labor agreements. Plant managers, in turn, teach and train their supervisory staffs. After a local agreement is made, industrial relations personnel discuss it in detail with the plant manager and the assistants involved. They make sure that each man understands the specifics of the agreement and the overall policy of changes made.

Communications between management and employees is considered to be an important part of the company's industrial relations program. Ted Johnson, editor of the "Ideal Cement Mixer," believes his most important job is to keep employees informed on what Ideal thinks and does. "We've got to get across the proposition that this is a three-way team job—between management, employees and the company owners," he states. "If we do, our men will know our company better, they'll be better employees, and our company will prosper."

The "Mixer" is a well-prepared and edited monthly publication that is beginning its 12th year of narrowing the already close gap between management and employees. First issue of the magazine coincided with the anniversary of the company founder's birthday. Personnel men at the various plants and offices are regular correspondents.

Please turn to page 143



Yes! ...it's **ALL STEEL**



**HP RANGE:**  
1/2 to 40 hp

**RATIOS:**  
4:1—14:1—24:1 (or 20:1)

**OUTPUT SPEED RANGE:**  
420 to 5 rpm

**TORQUE RATINGS:**  
up to 31,000 lb-in

## **FALK** ALL STEEL Shaft Mounted Drive

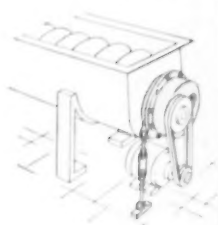
...Steel can "take it"!

**STEEL frame**...of fabricated plate supports all rotating elements—provides double the ability of iron to maintain vital alignment of revolving elements, even under shock load or external impact.

**STEEL housing**...will not fracture, serves only as protective cover and lubricant reservoir. Therefore, lubricant supply is safeguarded.

**STEEL tie-rod** and straddle-mounted tie rod brackets...are fastened to heavy steel frame by steel bolts in double shear.

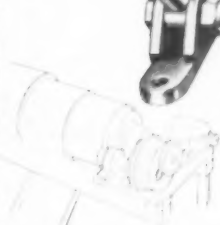
### A FEW TYPICAL APPLICATIONS



SCREW CONVEYOR



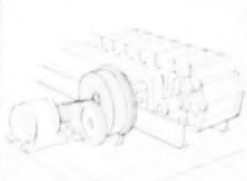
BUCKET ELEVATOR



GRAVEL CLASSIFIER



BELT CONVEYOR



APRON FEEDER



LINE SHAFTING

### DELIVERIES TO MEET YOUR REQUIREMENTS

Off-the-shelf delivery from your Authorized Falk Distributor. *Shipment from factory or warehouse stocks within 72 hours after receipt of your order.*

Write for Bulletin 7100

**THE FALK CORPORATION, 3001 W. CANAL ST., MILWAUKEE 1, WIS.**

Representatives and Distributors in Most Principal Cities

Manufacturers of Quality Gear Drives and Flexible Shaft Couplings

**FALK**  
...a good name in industry

**for road screening operations it's ...**



# **INDUSTRIAL SCREENS**

For accurate screening . . . maximum resistance to abrasion, vibration, and fatigue . . . long screen life and the assurance of large tonnage output at low cost . . . you can depend upon CF&I Industrial Screens. That's because CF&I Screens are made from specially selected steel, then crimped and woven extra tightly to assure maximum usage throughout screen life—even when subjected to severe corrosion, abrasion, or high temperatures.

Next time you need industrial screens, take a tip from the builders of the Nation's highways and choose CF&I Industrial Screens. You'll find it a profitable choice.



4483

## **SPACE SCREENS**

**THE COLORADO FUEL AND IRON CORPORATION**

**THE COLORADO FUEL AND IRON CORPORATION**—Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso • Ft. Worth • Houston • Lincoln (Neb.) • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Wichita

**WICKWIRE SPENCER STEEL DIVISION**—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia  
**CF&I OFFICES IN CANADA:** Toronto • Montreal **CANADIAN REPRESENTATIVES AT:** Calgary • Edmonton • Vancouver • Winnipeg

Enter 1055 on Reader Card

## Broad but rigid policies form backbone of Ideal's sales operation

**I**DEAL'S SALES DEPARTMENT embraces a sizable collection of functions including (in addition to sales) advertising, public relations, research and transportation. Heading up this group is Harry Bolton—a long-time Ideal employee who has behind him 23 years in sales work with Ideal. During his climb up the Ideal ladder, he served as a sales representative for the OK, Houston and Alabama divisions and was regional sales manager of the entire southern division when he was selected to head up the sales department in Denver in 1955 and was elected a vice-president of the company last year.

Like everyone else in the Ideal company, Harry Bolton looks upon personnel as of primary importance to the future of the company. The result is a remarkable employment record for Ideal sales personnel. There are only two people on the Ideal sales staff who have ever worked for any other company. All sales managers have come up through the ranks. Ideal has probably appointed more young sales managers than any other company in the industry: eight of the company's sales offices are now managed by World War II veterans who joined Ideal since the war.

"We have a real streamlined young organization," says Bolton proudly. "Actually we have upgraded more than we have expanded our personnel."

There are 130 people in the Ideal sales department. Authority is channeled through Bolton to three regional sales managers (Pacific, Rocky Mountain and Southern), through them to 12 sales managers and ultimately to the individual salesmen—who have a high degree of autonomy in their work. All of Ideal's salesmen have gone through the Portland Cement Association's technical training course and all of them have more than sufficient experience in the cement field to understand customer problems intimately.

Ideal sales operations defy all sorts of sacred cows. They have no formal sales meetings. The salesmen know their business and company policies, and must operate intelligently within them. Ideal has broad but rigid selling policies that don't change under any circumstances. Inside this structure, salesmen have great freedom. That they've enjoyed it is indicated by the almost complete lack of turnover in the Ideal sales staff. (Only one man has left the staff since the war, and he departed to a top management post in an allied industry).



**H. B. Bolton**, vice president of administration and also general sales manager

**W. J. Conway**, Pacific regional sales manager, left, discusses sales problem with **A. A. Courteney, Jr.**, sales manager for California division in San Francisco office



## Ideal's sales operation

*continued . . .*

Here are some other sidelights of Ideal's sales program:

—The company considers the ready-mixed concrete industry of primary importance in their sales picture and expects this industry to assume an ever larger share of the concrete business.

—Ideal's salesmen sell harder in boom periods than in poor times—although Ideal never laid off a salesman during the depression years. Ideal salesmen today aren't phone answerers or customer pacifiers; they travel, day in and day out, **selling cement and service.**

—Ideal feels that the problem of educating its customers on the proper use of cement is not a major consideration in its operations. "We don't have many fly-by-night operators," says Bolton. "Our customers generally know what they're doing—and our job is to sell them the best cement we know how to make and not to tell them how to use it. We feel that customer education is the sphere of the Portland Cement Association, where it's necessary at all."

—Along the same lines, Ideal doesn't use service engineers which have become rather popular among a number of other cement companies. "In our opinion," says Bolton, "our customers have grown up and don't need this kind of service. We manufacture and sell cement; we're not in the concrete business. They are, and they should be permitted to handle their own business."

—The problem of concrete quality is practically

nonexistent with Ideal. They receive so few complaints on quality that they have no specific machinery set up to handle them.

—Ideal's sales cost per barrel has been going down steadily over the past decade while other costs have been rising just as steadily. Although this is a normal manifestation of an expanding business, the cost decline has been pronounced in Ideal's sales operations.

Periodic cement shortages have made sales departments one large headache in recent years throughout the cement industry. How does Ideal handle the tight cement situation?

"We've never been a quota company," says Harry Bolton. "All of our efforts have been directed toward keeping production up to the point where our customers can always expand if they want to. We are a growth company; we want our customers to be growth-minded, too."

"We have never experienced shortages of a continuing nature. Sure, there have been spotty shortages, but they've been due to surges of business—where a big project required a large amount of cement. This is part of the business and is something we will always have to live with. But as far as continuing shortages are concerned—we just don't have them. Where such a situation is developing, we provide the added capacity to take care of the customers there."

"Many cement shortages are artificial, anyway," adds Bolton. "You can often trace a shortage back





M. R. Schilling, sales manager for Alabama division and John Carey, salesman, discuss a bid proposal in Ideal's Mobile, Ala., sales office

to the fact that a user will place an order for concrete with a half-dozen suppliers and all of them will place orders for cement to take care of the same ultimate user. We try to keep in close touch with markets to avoid duplication."

How well Ideal takes care of its customers is illustrated by the fact that in 1956, Ideal imported 568,000 bbl. of German clinker to be processed and sold through the Baton Rouge and Houston and Mobile plants. Although Ideal took an immediate loss on this cement, company officials have no doubts that the long-term gains will be considerable. The customers whose needs were filled with this important clinker will be served out of new Ideal capacity this year (100,000 bbl. will be imported in 1957) and entirely by 1958.

"We didn't want the growth of that area stunted," says Bolton, "because of any serious cement shortages."

This thinking is paying Ideal large dividends.

**PUBLIC RELATIONS.** Since Ideal is acutely conscious of the necessity of making a good public impression and the responsibilities of doing business in a community, practically everything the company does has some roots in public relations. Therefore, it is difficult to single out a formal public relations program. Listed below are seven practices which contribute considerably to Ideal's good relations with its various publics:

1. Ideal employees are encouraged to fill speak-

ing engagements at business, civic or social gatherings whenever the opportunity comes.

2. Ideal people also participate in—and frequently assume leadership of—constructive community drives of every name and nature.

3. Good housekeeping is an absolute fetish with Ideal, and every one of its plants and offices is kept constantly clean and attractive. It's a common sight to see sweepers working industriously about Ideal plants—inside and out.

4. All employees are urged to be active in civic affairs, and the company will usually pick up the tab for the cost of membership and participation in such activities. Ideal people are also encouraged to be active in civic government, and a number of them have held local offices. (The plant manager at Ada, Okla.—David Howe—is presently a member of the City Council.)

5. Ideal officials consider a cement plant a hazardous place for conducting tours and strive to bring the plant to the citizens instead—by means of a film called "America Builds With Ideal Cement" which they have shown thousands of times to community groups of all kinds.

6. Local plant people are encouraged to get acquainted and maintain a good relationship with the press and other public information media.

7. Good public relations is carried on primarily at the local level—but it's made a great deal easier and much more effective because Ideal's top management is both sympathetic and helpful to the idea. Very few directives—but a great deal of encouragement and assistance—come out of Denver on this subject.

Acting as adviser for Ideal on public relations and advertising matters is a young advertising executive named Harry Lazier, who is a partner in the



The "Felicity Anne," Ideal's radar equipped, ocean-going tug, pushes two loaded cement barges down the intercoastal canal from Mobile, Ala., toward New Orleans.

## Ideal's sales operation

*continued . . .*

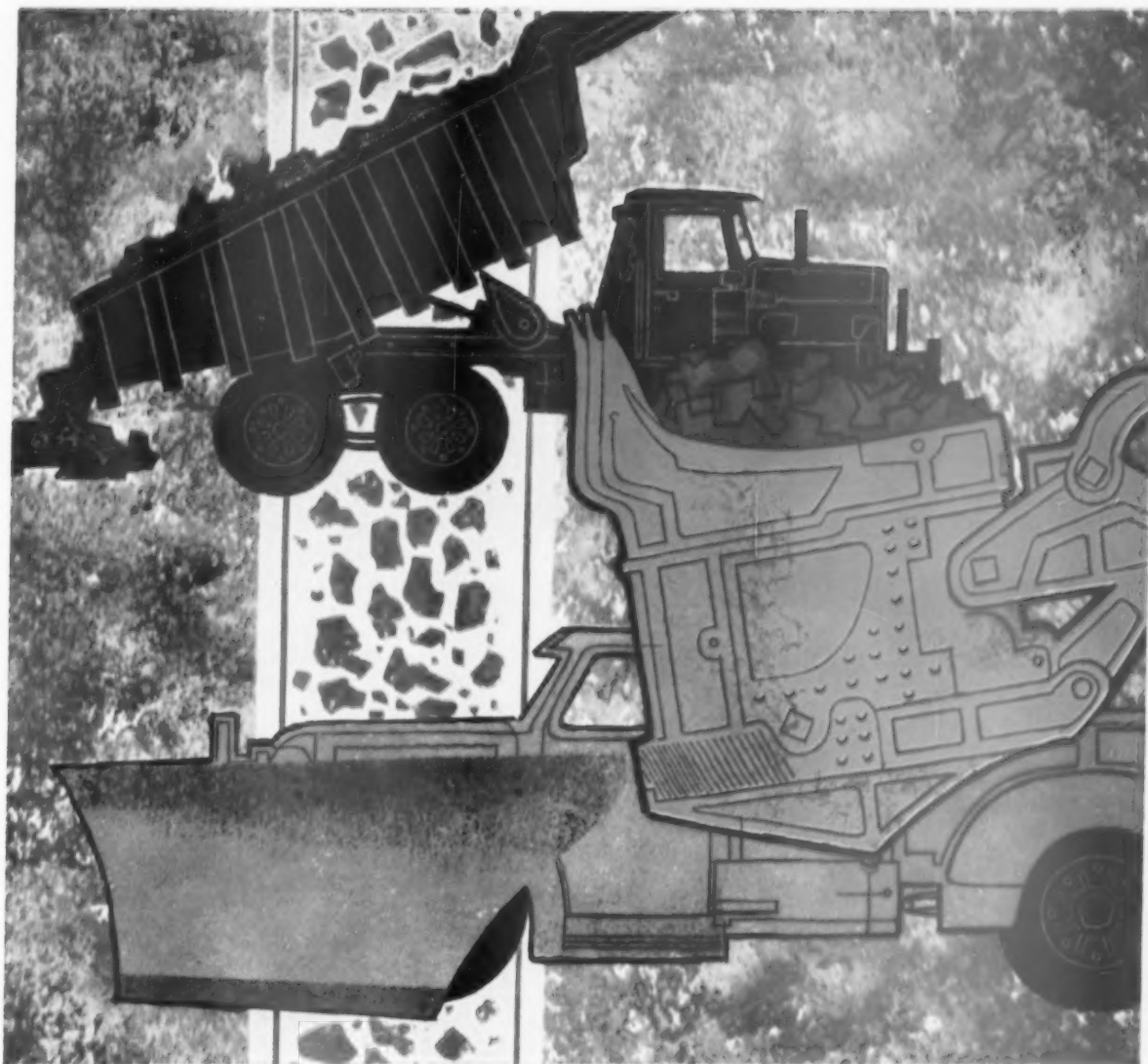
Denver ad agency of Rippey, Henderson, Bucknum and Co. This agency has been employed by Ideal since it first dipped into local advertising in 1945—and Lazier has handled the account during that entire period. Although he is technically not a company employee, Lazier is considered one of the family and is intimately familiar with Ideal's problems, people and plants. In addition to handling all of Ideal's graphic arts—ads, annual reports, sales literature, etc.—Lazier also takes most of their photographs and has produced two motion pictures for the company—one (mentioned earlier) showing how Ideal makes its cement, the other on the construction of one of Ideal's biggest jobs, the Lake Pontchartrain bridge in Louisiana.

One factor that has appreciably enhanced Ideal's public dealings is that the most potent community relations problem for the cement industry—dust—is no longer a serious problem at any of the Ideal plants. The new plants have the most modern, effective and complete dust collecting systems available, and the older plants are being brought up to the maximum possible dust collection standards in the industry.

Ideal also works hard at keeping its 10,000 stockholders closely aware of the hopes, plans and activities of the company. They do this through annual report, quarterly reports and advertisements in business and consumer magazines. Ideal is also now contemplating a regular program of letters and other mailing pieces to further enlighten stockholders on company activities. Ideal has year-by-year improved the quality of its annual report, and the 1956 report set a new high of excellence in design, typography and presentation.

**ADVERTISING.** Advertising is a growing part of the Ideal program. In 1957, Ideal will launch its first series of advertisements in national publications. The purposes of this new campaign are fourfold: (1) To increase the acquaintanceship of cement users with the brand names and types of cement manufactured by Ideal; (2) to provide a door-opener for salesmen (typically, Ideal isn't looking for ways to conserve its markets but rather to expand them); (3) to acquaint investor groups with the activities and financial position

*Please turn to page 148*



## JALLOY special alloy steel

resists impact and  
abrasion in toughest  
applications



Heat treated Jalloys wear as much as 20 times longer than mild steels under rigorous impact and abrasive conditions. By using Jalloys you can cut maintenance costs drastically. Increased product life reduces downtime and lowers your labor costs.

Jalloys are available in the forms you require (plates, hot rolled sheets, hot rolled bars, small shapes and structurals). Jalloys can be purchased in three grades to meet specific use requirements: Grade 1, where formability is important; Grade 3, capable of being heat treated to excellent physical properties for good resistance to abrasion or wear; Grade 7, where high hardness with good ductility or wear resistance is desirable.

Your local distributor can supply you with latest information on these Jalloys grades, or you can write to Jones & Laughlin Steel Corporation, Dept. 481, 3 Gateway Center, Pittsburgh 30, Pa.

**Jones & Laughlin**  
... a great name in steel



Ideal's New Orleans terminal, showing cement storage silos and car loading facilities

## Ideal's sales operation

*continued from page 146*

of Ideal; and (4) to keep stockholders posted on Ideal plans and activities.

The new advertising program, which will probably cost between \$100,000 and \$120,000, will be concentrated in four types of media. Local newspaper ads will be used to keep the people in plant areas informed of Ideal activities of interest to the community. Financial papers (e.g., **The Wall Street Journal**, **Barron's**, etc.) will carry ads aimed at investors. Trade journal advertisements will be concentrated on the Ideal brand names and cement types. And a few advertisements will be run in consumer-business publications like **Time** and **Business Week**—aimed at investors, stockholders and the general public.

Ideal advertising has gone through a series of ups and downs over the past decade, although throughout these fluctuations the company has generally felt the need and importance of an advertising program. Current feeling was expressed by Harry Lazier when he said: "Ideal feels a responsibility to advertise both its brand in particular and the importance of the cement industry in general—over and above what the Portland Cement Association is doing in this area."

Ideal did its first large-scale advertising in 1948 when it was decided that all of Ideal's various properties would start selling cement under the Ideal brand name rather than the individual brand

names they had retained when Ideal bought them out. The scope of Ideal advertising was further expanded when Ideal purchased the Pacific Portland Cement Co., which operates in an area not served by Portland Cement Association advertising and promotion.

From this beginning, Ideal advertising grew steadily throughout the company, concentrated mainly in local newspapers where the merits of concrete and the Ideal brand were both extolled. In 1956, when Harry Bolton took over as vice-president for sales, he felt it necessary to reassess the entire advertising program, determine the greatest areas of need, see where Ideal advertising was duplicating the P.C.A.—and then set up a new program in light of the knowledge gained. As a result, Ideal's advertising was cut to the bone in 1956, preparatory to launching the new program this year—which concentrates on national media and cuts down considerably on local newspaper advertising.

The doubt about the actual size of the advertising budget for 1958 is not an effort to be cagey by Ideal; believe it or not, it is simply because they aren't sure themselves. This illustrates one of the most remarkable things of all about Ideal: **They don't work on a budget.**

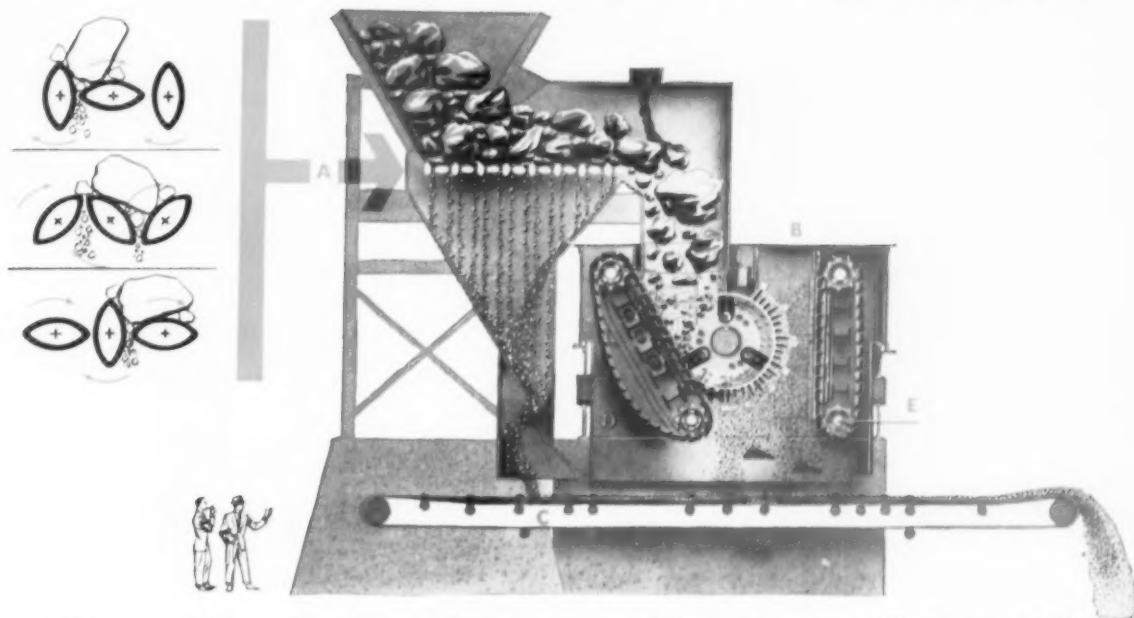
Why? Harry Bolton puts it this way: "This

*Please turn to page 151*



# new feeder-hammermill combination

*makes possible 50 to 100% capacity increases*



This new combination of a Universal Wobbler Feeder (patented) and a Bulldog Hammermill was engineered for one of the world's largest cement mills to average 600 tons per hour. Here's how it works . . . here's why it can boost capacity for you.

The Universal Wobbler Feeder (A) feeds the Bulldog Hammermill (B). Elliptical-shaped Wobbler bars are set in alternate vertical and horizontal positions to form the feeder bed. Turning of the bars imparts a rocking, tumbling motion to the load. Mud and clay are worked loose, fines sift through bars and drop to under-conveyor (C) oversize is delivered to the Hammermill. Wobbler operates on 15 to 25 h.p.

Bulldog Hammermills feature a traveling breaker

plate (D) and cleaning bar (E) eliminating build up of material in breaking chamber. Regardless of moisture, a Bulldog Hammermill keeps your crushing operation going without clogging or jamming in wet, sticky material.

This is why you can increase your production up to 100%. The Wobbler Feeder sends only oversize to the Bulldog Hammermill. Thus, the Bulldog can handle more loads per day, produce more finished material. And you get double non-clog protection by the scalping effect of the Wobbler Feeder and the non-clog moving breaker plate on the Bulldog Hammermill.

*Let our engineers show you how this combination can work for you. Write to*

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**PETTIBONE**  
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### AUXILIARY EQUIPMENT:

- FEEDERS
- CONVEYORS
- SCREENS
- BINS

Enter 1129 on Reader Card



## **Bucyrus-Erie 40-R Solves Tough Drilling Problem For General Crushed Stone Co.**

Quartzite segmented by fissures and seams is the big problem in the General Crushed Stone Co. quarry near White Haven, Pa.

To drill through this material economically, the company first tried large cable tool drills. These proved too slow. Two makes of rotaries were tried. Then in September, 1956, a Bucyrus-Erie 40-R rotary was put on the job, drilling 9-in. holes. Footage increased so noticeably that the 40-R was made a permanent part of the production set-up.

Features like these contribute to the 40-R's fine performance: air bailing cools the bit and cleans out cuttings, eliminates need for water—especially important during cold weather. Heavies pile up next to the hole, provide handy stemming material and permit dry sampling. A remote-controlled, power-driven drill pipe rack reduces manual effort. Hydraulically powered down pressure on the bit provides controlled load on drilling tools for maximum penetration. Ward Leonard electric control on rotation of the drill pipe permits drilling at the most efficient speed for a given formation.

Two Bucyrus-Erie rotaries are available—the 40-R for drilling 6¾- to 9-in. holes, the 50-R for drilling 9¾- to 12¼-in. holes.

For more information on how these drills can bring new economies to your quarry, write us today!

64B57C

**BUCYRUS  
ERIE**

**SOUTH MILWAUKEE, WISCONSIN**



## Ideal's sales operation

*continued . . .*

isn't a budgeting company. Our philosophy is simply not to spend money unless we get an adequate return. When we feel the prospects are right for a healthy return, then we don't want to be hampered by budgets. Most department heads will buy everything in sight at the end of a year in order to spend all their budget so they can be sure to get as much or more the next year. We don't have to worry about that here. Actually, the best way to guarantee careful spending is to give men complete freedom of action. I know when I was in the field, I was more careful with money because there were very few controls on it."

In place of budgets, Ideal substitutes estimates, combined with close liaison between company officials. Whenever there is a specific project—such as a building program—the company obtains detailed estimates before embarking on the job. Otherwise, departmental spending is under the direction of the department head and pretty much at his discretion. Each week, however, there is a top level management meeting, during which departmental as well as company-wide problems are aired and discussed. Thus there is a constant running check on the volume of expenditures within the framework of departmental freedom.

"We don't make snap judgments," adds Bolton. "When we make expenditures, we expect them to pay out. We don't act impulsively—but we do act."

**TRANSPORTATION.** One of the major bugaboos in selling cement these days is transportation, and Ideal's transportation problems cover the waterfront—both literally and figuratively. Ideal uses all types of transportation for moving its product from plant to market, depending on which means is most naturally, easily and economically available in a particular market area. In general, Ideal's transportation set-up looks something like this:

Southern markets are served mostly by rail;

Rocky Mountain markets are served about half-and-half by rail and truck; West Coast markets are served about 95 percent by truck.

There are two steps, however, in Ideal's transport of cement. Most of Ideal's markets will soon be served out of four cement terminals. Three—at New Orleans, Sacramento and Salt Lake City—are completed and in operation; one more—at Lake Charles, La.—is expected to be completed and operating within the next year. Much of the bulk cement is moved by water into three of the terminals (exception: Salt Lake City) and rail, truck and water are all used to move the cement from the terminals to the customers.



Two hopper trucks get a load of cement at the truck loading facilities of Ideal's Redwood City, Calif., plant

Ideal is convinced that transportation is one of the most important keys to successful operation in the cement industry, and much attention and effort has been devoted in this direction. The main consideration, of course, is economy, and this has dictated most of Ideal's transportation decisions. In general they have found rail and truck rates—when all factors are considered—to be rather closely comparable in cost in their market areas. Although rail rates are higher, the increased cost of extra handling and bookkeeping in truck transport just about makes up the difference. Thus the additional factor of the flexibility of trucking as opposed to the established route of rail lines is often a deciding factor. Every Ideal sale is checked in Denver for freight rates, price and shipping ethics—to make sure that inflexible company policy on these matters is rigidly observed.

Ideal has considered the possibility of trucking its own cement, although not very seriously. It has a small experimental truck fleet operating out of their Gold Hill, Ore., plant where transportation problems are acute. The experience there has been successful but hardly conclusive because of the special conditions. Harry Bolton probably summed up the general philosophy when he observed: "We're cement people, not truckers." Throughout the company, however, Ideal is emphasizing fast loading and weighing of cement for shipment. The new terminals were designed with speed of loading very much in the forefront, as reflected in ultra-modern loading facilities.

*Please turn to following page*



## Reaching into the future . . .

**T**HERE IS ONLY ONE NOTE on which to conclude the Ideal story: the note that with Ideal things are just beginning, no matter where you try to end them. Ideal's youth, vigor and farsightedness—its constant pioneering urge—is perhaps part and parcel of the philosophy of the American west, where Ideal Cement Co. started and where its operations are now so completely concentrated.

Of the future, Ideal president Cris Dobbins says: "We are convinced if we are to continue as a sound and progressive company that we must have additional capacity ready for the expected increase in demand, and to explore and make use of all scientific advances in our industry to secure the most efficient operations possible at all of our plants. By so doing, we will be able to participate in the growth possibilities to the fullest extent, and, in addition, we can maintain the position achieved for our company."

Ideal people are reaching — fuller, faster, more effectively — into the future. They see in the new highway act "a public works program that is more than twice as great as the largest ever undertaken in this country." They are shooting at a capacity over and above the consumption rate indicated by their market research figures because they "have in mind the possibility that the use of cement may increase more rapidly in our trade area than it will in the nation as a whole in the next 10 years."

With this sort of thinking to prod it along, it probably will, too!

But in the final analysis, the Ideal story must remain the story of people—and the youthful spirit they have created. From the board of directors through the president and down to the last employe, Ideal's youth and vigor are infectious: to customers, stockholders and business associates. This kind of spirit built the cement industry. Because of it—with Ideal in the forefront—it will continue to grow.

### CONCLUSION





**WHEN THE DIGGING  
GETS REALLY TOUGH**



Patent  
Applied for

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*ESCO* replaceable Wear Caps protect point adapters for long-wearing life.

Wear Caps are rugged, heat treated, high Brinell, 12M Castings, that slip over the top front of the adapter to protect the adapter from abrasive wear.

**Replace the cap and not the adapter.**

Designed specifically for large shovels, to cut adapter replacement in hard rock and other extreme conditions.



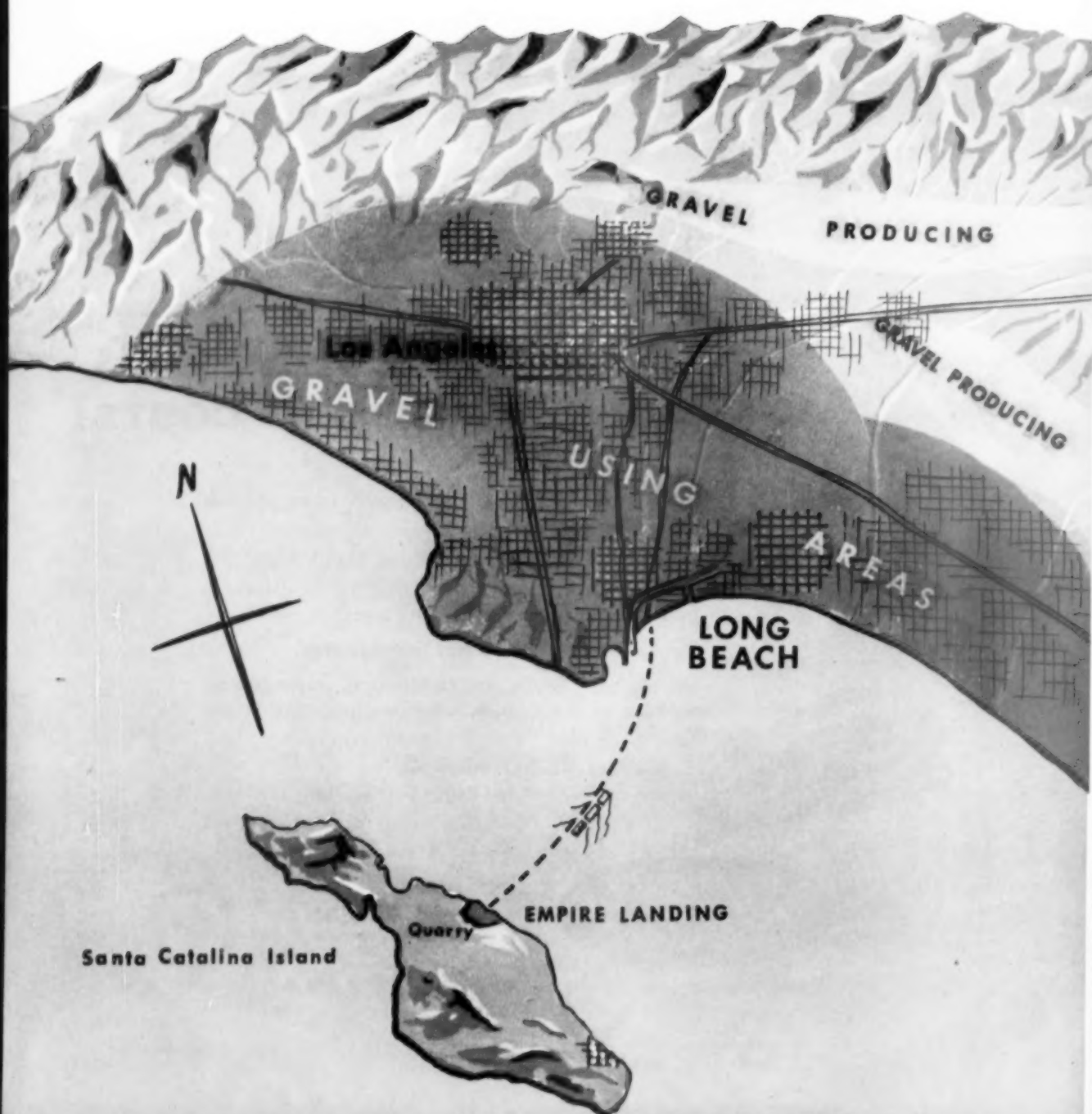
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Ask for ESCO Tested Points Catalog No. 187.**



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**As traffic problems mounted, this**



# stone company took to the water

*Graham Brothers develop quarry on Santa Catalina Island*

By ELWOOD MESCHTER

"**W**E HAVE NO TRAFFIC PROBLEMS in the San Pedro Channel . . ." This is Paul Graham, president of Graham Bros., Inc., speaking. Years ago he realized that the best way to overcome the traffic which was constricting their operations in El Monte, Calif., was to develop the quarry on Santa Catalina Island on property leased from the Santa Catalina Company.

The heavy users of crushed stone for aggregates in Los Angeles are centered in the Long Beach harbor area, stretching from San Pedro to Huntington Beach. The large producers of sand, gravel and crushed stone are located in the foothills of the San Gabriel mountains ranging eastward from Los Angeles. As these producers go further east to replenish their gravel resources, they not only have further to go to reach the harbor, but must buck ever-mounting highway congestion.

This fact gives the Graham Bros. quarry on Catalina Island a tremendous economic advantage which grows greater each year. As competitors take longer to get to Long Beach, the island with its fixed location gets "closer" all the time. Catalina is about 20 miles south of Long Beach across the San Pedro Channel, and barges make the trip overnight on a regular schedule carrying about 2,300 tons of stone.

**These slow barges provide economical transportation** which is gaining advantage over trucks. The fastest, largest and most efficient trucks used in the Los Angeles area can become enmeshed in hours-long traffic jams. They must literally crawl through endless suburbs between the newly developed gravel pits in the San Bernardino and Riverside districts and their destination in the harbor area.

The Graham Bros. distribution yard in Long Beach is in a strategic location to deliver crushed stone from Catalina to the many ready-mix and asphalt plants in the area. These plants are supplying materials to build the hundreds of new manufacturing, processing and refining firms moving into Long Beach. A vast expansion of the aircraft, chemical, refining and electronic industries also adds to the demand. All of this expansion spurs the growth of new residential areas, service industry and utilities.





The crushing and screening plant has been gouged out of the rugged north shore of Catalina Island

This boom was designed for high-capacity loading of barges which carry the stone to Long Beach distributing yard



## As traffic problems mounted

*continued . . .*

The quarry on Catalina is not new. It has served the Long Beach area for many years. Over the years, Graham Bros. has taken out 10 million tons of rock without making an appreciable dent in the island. However, the firm is constantly expanding the operation. "We see an immediate market for another 10 million tons," says Mr. Graham.

Santa Catalina Island is one of the eight Channel islands off the coast of southern California, and like most of these islands it is a tilted fault block of igneous rock. The high cliffs of the northeast shore suggest a fault scarp. The whole island appears to be heavily fractured, for, from the air, it can be seen that the cliffs are deeply fissured and unstable. As a result of the slight earth movements and tremors common in California, the cliffs occasionally fall into the sea—taking with them the thin covering of overburden.

The Graham Bros. "quarry" on Catalina is a bench in one of these cliffs about 200 ft. above the shoreline. The quarry face is about 800 ft. of shattered rock which can be handled by a shovel into trucks at 400 tph. No blasting is necessary to bring the rock down to the shovel.

The quarry yields a wide range of sizes. These are mostly fine-grained sharp pink andesite, but there is an occasional intrusion of black basaltic rock. Up to 10-ft. cubes are found.

Jetty stone finds a ready market with the steady expansion of harbors and other marine installations in the Channel islands and along the California coast. Blocks up to 12 tons are set aside and loaded out by a crane with tongs. Other rock, normally too large for the crusher, is useful for riprap, ashlar or rubble, but any not used in this way can be eventually crushed to aggregate sizes.

Rock is carried from the face to a 30-in. gyratory crusher in end-dump trucks. The crusher is fed with a 60 in. wide apron feeder equipped with a curtain of steel chains at the head end to prevent surging the crusher. A frame over the crusher supports a chain-hoist with tongs to haul out any rock which might jam at the top of the crusher.

An inclined belt conveyor about 400-ft. centers and 48 in. wide takes rock from the primary crusher to a surge pile ahead of the secondary crushers. This is a heavy duty belt with 10 plies and two breaker strips — ideal for handling the sharp crushed stone. Material is fed from the surge pile to an inclined belt conveyor taking it to a double deck screen above the two secondary crushers.

The secondary crushers are cone crushers. One takes the plus 3 in. from the top deck of the

*Please turn to page 158*





for rotary kiln service...

## HARBISON-WALKER REFRACTORIES of special merit — for every requirement

Select the best for each particular purpose from the full complement of types and classes of refractories which are especially suited for the various conditions involved in the many different rotary kiln operations.

### **Brands With Long Service Records**

*Basic Refractories for High Temperature Zones  
of Rotary Cement Kilns*

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ALUSITE 70% Alumina  
ANCHOR 60% Alumina  
CORALITE 80% Alumina

**LOTHERM** The high strength insulating brick specifically developed for use in the preheating zones of rotary cement kilns, provides durable insulating linings for direct exposure to the prevailing kiln conditions.

Various high duty and super-duty fireclay brick brands of superior quality are available from plants which afford lowest transportation costs — Pennsylvania — Missouri — Ohio — Alabama — Texas — Kentucky — Maryland.

— and the outstanding abrasion resistant refractories — **DURO** and **WYLAM A**.

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A long, heavy-duty belt conveyor (foreground) takes stone from the primary crusher to a surge pile ahead of secondary crushing and screening (left).



The heavily fractured and broken rock on the island needs no blasting, is easily loaded with electrically operated shovel.

## As traffic problems mounted

*continued from page 156*

screen, while the smaller unit handles the plus 1½-in. stone from the lower deck. All crushed rock goes to a belt which recycles it back to the top of the screen tower for rescreening.

There is a large volume of recirculating stone in this circuit. This will be reduced with the installation of new chutes, hoppers and screens and the plant will then be able to produce about four sizes of crushed stone.

The products now being shipped are stockpiled on the shoreline a few feet above water level. The belt conveyor from the present vibrating screen is a hundred feet higher so that the single storage pile has a capacity of several thousand tons of ma-

terial. This huge surge pile will always assure prompt loading of barges if one or more should arrive when the quarry is not operating.

Barges are loaded direct from the storage pile on the shoreline. A belt conveyor in a tunnel in the storage pile draws out stone, and transfers it to a loading boom with a 48-in. belt conveyor. The barge can be shifted with winches, while the loading boom can be raised or lowered. This arrangement permits a barge to be loaded and trimmed very rapidly and effectively. If two or more barges must be loaded, a dragline can reach a moored barge from its position by the stone storage pile.

Since Graham Bros. expects to operate the quarry on the island for some time, the company has established a small colony in a cove called Empire Landing. There is a network of roads to the quarry and to the airport which is at elevation 2,000. The company maintains a seven-passenger private plane which provides fast transportation between headquarters on Peck Road in El Monte and the Catalina division.

Since Catalina Island is solid rock, there is little question of depleting the quarry for a long time to come. When Charlton Dunn, production manager was asked, he said, "Reserves? We calculate them by the cubic mile."

### EQUIPMENT USED AT CATALINA ISLAND

Shovel	Northwest Engineering Co.
Trucks	Euclid Div., General Motors Corp.
Crushers:	
Primary, 30 in.	Allis-Chalmers Mfg. Co.
Secondary, cone (2)	Nordberg Mfg. Co.
Apron feeder	Stephens-Adamson Mfg. Co.
Main conveyor belt	B. F. Goodrich Co.
Vibrating screen	Hewitt-Robins Inc.
Belt idlers	Hewitt-Robins Inc.
Crane and tongs	Northwest Engineering Co.
Compressor	Chicago Pneumatic

END

# B.F. Goodrich



## All-Nylon B.F. Goodrich tires give over 4 years' service to highway excavator

**G**ASPARINI EXCAVATING CO., INC., of Peckville, Pennsylvania, does highway and heavy construction work. Here the company's equipment is at work on the Pennsylvania Turnpike, hauling giant loads over rock-strewn roads. For this rugged work, the company uses B.F. Goodrich FLEX-RITE nylon tires, reports many give over 4 years' service, including 2 retreads.

"B.F. Goodrich all-nylon tires have minimized breakdowns, impact breaks and other cost and time-consuming delays," writes President Gene Gasparini. "They help us give maximum contract performance in the shortest contract period."

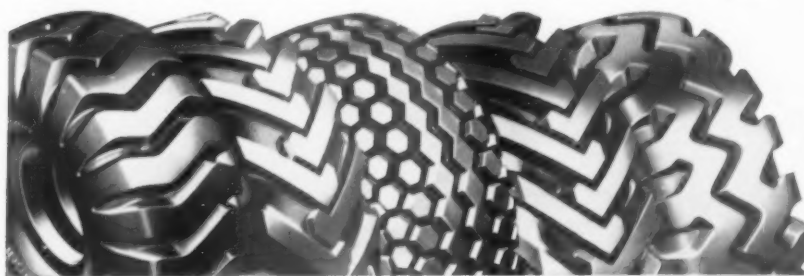
B.F. Goodrich tires are built with FLEX-RITE nylon cords. FLEX-RITE nylon cords withstand double the im-

pact of other cord materials, resist heat blowouts and flex breaks. Result: more retreadable B.F. Goodrich tires!

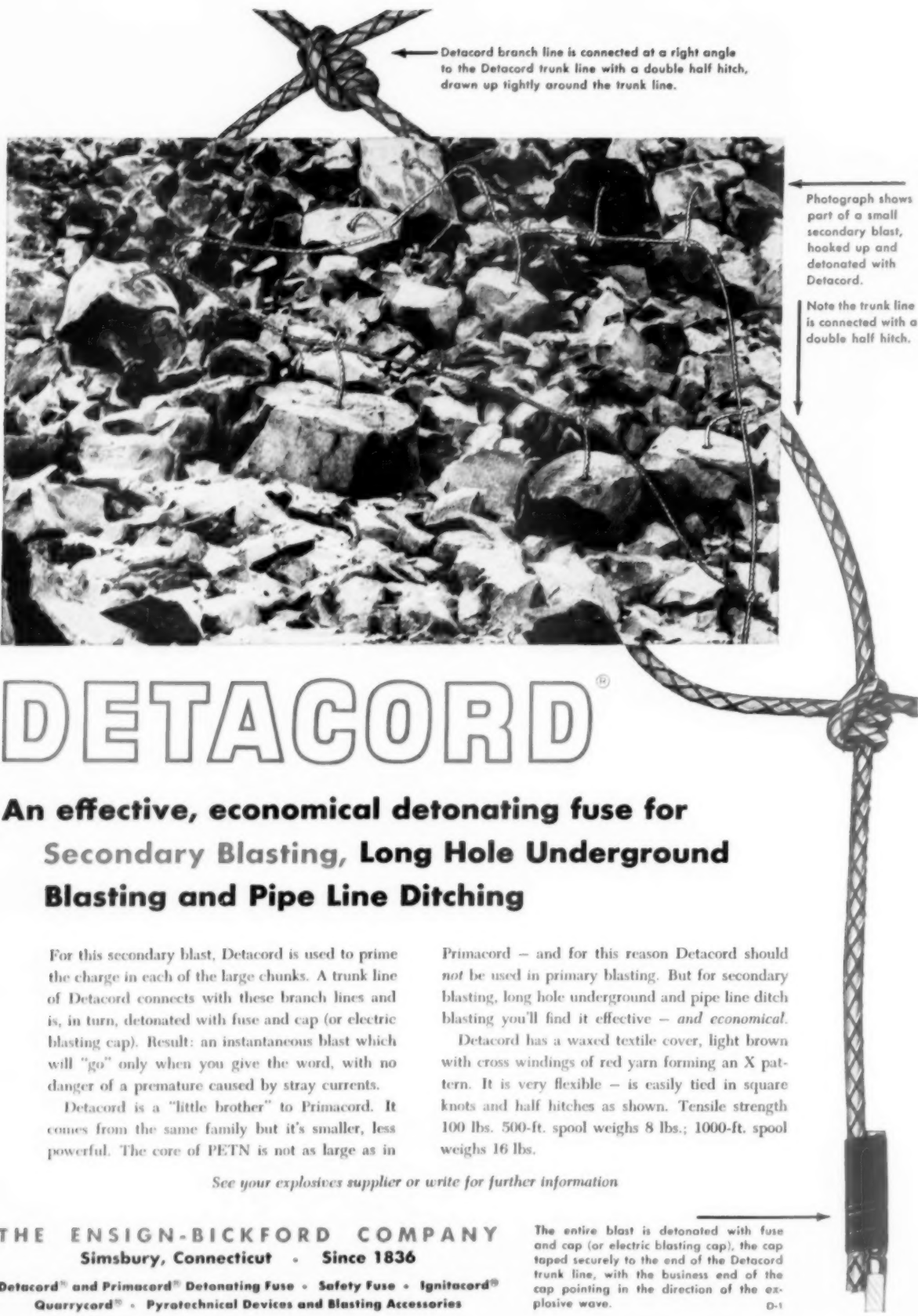
Your B.F. Goodrich dealer has a complete line of tires for every off-the-road job, including the new Rock Service Tubeless or tube-type (far left) for mining, quarrying and dirt-moving jobs. And he offers expert, on-the-job tire service. See him today or write B.F. Goodrich Tire Co., A Division of The B.F. Goodrich Co., Akron 18, Ohio.

Specify B.F. Goodrich tires when ordering new equipment

**There's a B.F. Goodrich tire for every construction job**



Your B.F. Goodrich dealer is listed under Tires in the Yellow Pages of your phone book  
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# DETACORD<sup>®</sup>

## An effective, economical detonating fuse for Secondary Blasting, Long Hole Underground Blasting and Pipe Line Ditching

For this secondary blast, Detacord is used to prime the charge in each of the large chunks. A trunk line of Detacord connects with these branch lines and is, in turn, detonated with fuse and cap (or electric blasting cap). Result: an instantaneous blast which will "go" only when you give the word, with no danger of a premature caused by stray currents.

Detacord is a "little brother" to Primacord. It comes from the same family but it's smaller, less powerful. The core of PETN is not as large as in

Primacord — and for this reason Detacord should *not* be used in primary blasting. But for secondary blasting, long hole underground and pipe line ditch blasting you'll find it effective — *and economical*.

Detacord has a waxed textile cover, light brown with cross windings of red yarn forming an X pattern. It is very flexible — is easily tied in square knots and half hitches as shown. Tensile strength 100 lbs. 500-ft. spool weighs 8 lbs.; 1000-ft. spool weighs 16 lbs.

*See your explosives supplier or write for further information*

**THE ENSIGN-BICKFORD COMPANY**  
Simsbury, Connecticut • Since 1836

Detacord<sup>®</sup> and Primacord<sup>®</sup> Detonating Fuse • Safety Fuse • Ignitacord<sup>®</sup>  
Quarrycord<sup>®</sup> • Pyrotechnical Devices and Blasting Accessories

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The entire blast is detonated with fuse and cap (or electric blasting cap), the cap taped securely to the end of the Detacord trunk line, with the business end of the cap pointing in the direction of the explosive wave. D-1



# FREE! INFORMATION ON ADVERTISED PRODUCTS • NEW PRODUCTS • LITERATURE • CATALOGS

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**AUTOMATION SYSTEM**—Research-Cottrell, Inc. has made available an 8-page bulletin defining the term "Ideal Electrical Power." The bulletin demonstrates by means of comparative charts how this precipitator power level can be closely approached by automation.

Enter 521 on Reader Card

**BAGGING SCALES**—Richardson Scale Co. presents Bulletin No. 0357 describing automatic bagging scales (model FFFP). The six-page bulletin gives details regarding the characteristics of construction, operation, capacity, speed, accuracy and economy claimed for the scales.

Enter 522 on Reader Card

**BELTS AND SHEAVES**—Manhattan Rubber Division, Raybestos-Manhattan, Inc., offers 112-page Engineering Data Book No. 10, for the selection and design of Poly-V belt drives. In addition, data on V-belt drives are included, covering drive tables, horsepower ratings, installation instructions, trouble shooting and complete specifications for all drive sizes. Catalog 25 CB also is offered, covering new style designs of general service heavy duty types of conveyor belts.

Enter 523 on Reader Card

**CENTRIFUGAL COLLECTORS**—The Kirk & Blum Manufacturing Co. describes its two new collectors and explains their industrial applications in a folder which includes information concerning collector selection.

Enter 524 on Reader Card

**CHAINS**—Moline Malleable Iron Company has published a catalog, "Moline Chains," describing the complete line of Moline malleable chains now available. The catalog covers conveyor, elevator and power transmission chains including steel mill chains, elevator buckets and several new chain developments, showing methods of installing chain and how to identify chain attachments.

Enter 525 on Reader Card

**CONVEYOR PULLEYS**—Chain Belt Co. covers welded steel conveyor pulleys for belt conveyor and bucket elevator systems in Bulletin 5781. Drum types and self-cleaning wing-type pulleys are included. Features of the patented "FD" hub and standard hubs are outlined, as well as "Hi-Grip", "Super-Grip" and "Vulco-Grip" laggings.

Enter 526 on Reader Card

**CRANES AND SHOVELS**—Gar Wood Industries, Inc. has released 24-page Catalog F-220, featuring Gar Wood's 75B series of 3/4-cu. yd. power excavators.

Enter 527 on Reader Card

**DIESEL-ENGINE COMPRESSORS**—Ingersoll-Rand announces Form 3207 which shows integrally built diesel-engine compressors. The "SVO" compressor is featured, a unit which combines a four-cycle, V-angle, heavy-duty diesel engine and slow speed horizontal compressor on a single crankshaft, without use of gears or other coupling mechanism.

Enter 528 on Reader Card

**DUMPERS**—Aveling-Barford, Ltd. has issued a number of bulletins on its line of shuttle dumpers. The brochures detail features of the 3, 4 1/2 and 9-cu. yd. dumpers which are engineered for service in mines and quarries. They emphasize the trucks' patented two-way steering which enables the driver always to face in the direction of travel.

Enter 529 on Reader Card

**DUST COLLECTORS**—Pulverizing Machinery Div., Metals Disintegrating Co., Inc., has prepared Bulletin 52A featuring the "Jet-action" Mikro-Pulsaire dust collector. Principles of the continuous filter cleaning system which embodies jets of high pressure air are explained in text and diagram and the range of model sizes with their specifications is given.

Enter 530 on Reader Card

**ELECTRICAL CONTROLS**—Tipp-Tronic, Inc. describes the applications of various automatic self-contained controls in 16-page catalog AC-2, "Tipp-Tronic Automatic Electrical and Pyrometer Controls." The units specifically discussed include control of temperature, torque, viscosity, current, voltage, timing of welding, conveyor overload, speed, plating, battery charging, radiation, moisture content, pressure, deflection, thickness, weight, color and light.

Enter 531 on Reader Card

**ENGINE RATING**—International Harvester Co. has released a power unit-engine rating chart, CR-522-G, which lists brake horsepower on engines without fan or accessories, and on power units with fan and accessories, and ratings

on all fuels which can be used in the carbureted units.

Enter 532 on Reader Card

**ENGINE REPAIR**—Service Division of Cummins Engine Company, Inc. announces "Principles of Trouble Shooting for Cummins Diesels," a bulletin including a chart of common complaints and probable causes of trouble in the servicing of diesel engines.

Enter 533 on Reader Card

**GAUGES**—The Hays Corp. has prepared Form 57-687-297, a digest of specifications of Hays instruments and controls—draft gauges, combustion control and gas analysis apparatus.

Enter 534 on Reader Card

**HOSE ASSEMBLIES**—The Weatherhead Co. announces its 40-page "Hose, Hose Ends and Assemblies Catalog." The catalog contains information on bulk industrial hose, permanently attached hose assemblies, swaged hose assemblies and ends, hose end swivel adapters, as well as assembly instructions and installation data.

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**ROCK PRODUCTS**  
79 W. Monroe St.

AUGUST, 1957  
Chicago 3, Illinois

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MAIN PRODUCT OF PLANT

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[THIS INFORMATION WILL HELP US GIVE YOU ALL MORE SERVICE.]

Send information on items identified by key numbers beside or below items of interest to you.  
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## BUSINESS REPLY CARD

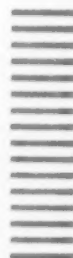
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# READER-SERVICE CARD

TO HELP YOU OVERCOME TODAY'S PROBLEMS . . .  
... AND TO PLAN EFFICIENTLY FOR TOMORROW

## FREE INFORMATION

You can obtain catalogs and literature listed on these and other pages of the magazine by entering the number appearing either below or beside the item of interest on the READER-SERVICE CARD in this page.

**HYDRAULIC STARTER**—Detroit Diesel Engine Division, General Motors Corp., describes the GM Hydrotarter in brochure 6SA-49. It is claimed that the Hydrotarter will provide instant starts for diesel engines while eliminating the maintenance costs of batteries, cables, magnets and air compressors.

Enter 536 on Reader Card

**INDUSTRIAL HOSE**—Aeroquip Corp. has released Catalog Bulletin No. 182, an abbreviated version of the complete line Aeroquip Industrial Catalog. Prepared for use in ordering, the bulletin was designed primarily for use in replacement.

Enter 537 on Reader Card

**LUBRICANTS**—The Alpha Molykote Corporation has published "Lubrication Newsletter," Volume 1, Number 2, containing a technical paper on the measurement of surface temperatures under sliding friction by a newly developed thin thermocouple technique.

Enter 538 on Reader Card

**MAGNETS**—Metallurgical Products Dept., General Electric Co., describes the vital functions of its magnetic engineering laboratory in Booklet DMPM-57-1 which covers the engineering activities required in evaluating magnetic circuit, designs, establishing test methods and standards, and investigating basic magnetic phenomena.

Enter 539 on Reader Card

**MOTOR GRADERS**—Caterpillar Tractor Co. has released 12-page Booklet D704 concerning the jobs handled by motor graders. Included is an outline of available attachments and a check list which points out features of Cat motor graders.

Enter 540 on Reader Card

**PINCH VALVES**—The Mine & Smelter Supply Co. has published a 10-page folder on Masco-Grigsby rubber and neoprene pinch valves for corrosive and abrasive pulps and liquids. This booklet gives complete engineering specifications and data on service recommendations in the rock products industry.

Enter 541 on Reader Card

**ROTARY DRILLS**—Reich Bros. Mfg. Co., Inc. has printed several specification leaflets promoting the Reich 150, 400, 650 and 750 rotary drill rigs.

Enter 542 on Reader Card

**SAFETY AIDS**—Towmotor Corp. has made available the Towmotor Plant Safety Kit containing specially prepared safety aids including a guide booklet on correct lift truck operation, cartoon illustrated safety posters for plant display, and directional and warning signs.

Enter 543 on Reader Card

**SLURRY SCREEN**—Dorr-Oliver Inc. announces the availability of four-page Bulletin 2300 describing the design, operation and advantages of its new unit for wet screening of non-fibrous slurry feeds. The DSM screen operates in the 8 through 48 mesh range.

Enter 544 on Reader Card

**SPRAY NOZZLES**—The Deister Concentrator Co. is distributing a folder concerning CONCENCO spray nozzles, including graphic charts for each type of Conceno nozzle showing the characteristics of the discharged sheet spray obtainable with different orifices under various pressures.

Enter 545 on Reader Card

**TRACTOR MANUALS**—Eimco Corp. announces two new manuals for operators of Eimco Model 105 tractors—the Eimco tractor-excavator and the Eimco Model 105 front end loader. Brochure B-L1055 on the tractor-excavator offers tips for efficiency in operation, safety precautions, and preventive maintenance. Brochure B-L1056 is a similar booklet describing the front end loader and attachments.

Enter 546 on Reader Card

**TRACTOR SHOVELS**—Allis-Chalmers Manufacturing Co. is distributing eight-page Catalog MB-1102 describing the engineering, design and construction features of the HD-16G and HD-21G tractor shovels.

Enter 547 on Reader Card

**TURNPIKE BOOKLET**—Medusa Portland Cement Co. presents "Medusa Helps Build Ohio's Magnificent Miles," describing Medusa's part in supplying materials for the construction project.

Enter 548 on Reader Card

**V-BELT CARE**—Allis-Chalmers Manufacturing Co. presents 11-page Bulletin 20X6234C, describing various types of V-belts and how to select and match them. Methods of correct installation and hints on care are included.

Enter 549 on Reader Card

**WEIGHING SYSTEMS**—The A. H. Emery Co. announces Bulletin 561 on its hydraulic systems for tank and bin weighing. The systems described were developed to provide a means of quantity control in automatic weighing of granular materials such as sand and lime. Fourteen arrangements are discussed.

Enter 550 on Reader Card

**WORM GEAR DRIVES**—The Cleveland Worm & Gear Co. provides summary information on its complete standard line of speed reducers, worm gear sets and special units in 16-page Bulletin #145, "Finger Tip Facts on Cleveland Worm Gear Drives."

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### READER-SERVICE CARD

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Company Address \_\_\_\_\_ City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

MAIN PRODUCT OF PLANT \_\_\_\_\_

CAPACITY \_\_\_\_\_

[THIS INFORMATION WILL HELP US GIVE YOU ALL MORE SERVICE.]

Send information on items identified by key numbers beside or below items of interest to you.  
List your choice in numerical order. Limit 10 per card.

(1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_ (4) \_\_\_\_\_ (5) \_\_\_\_\_  
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IF NO KEY NUMBER, USE COMPANY NAME

# TAKE A LOOK INSIDE

## that's where the job gets done



Getting at the innards of a Pennsylvania Reversible Impactor takes only a few minutes. Just unfasten either top cover and swing it back on its hinges and you have the whole works right in front of you—hammers, breaker blocks, discs and all the rest. This not only makes replacement of any part an easy job, but a quick glance tells the story of just how things are behaving. You can't help but feel that the Impactor is a mighty crusher, and yet mighty simple, too. That's why this great crusher, the daddy of all impactors, leads installations everywhere over ten to one.

Not only did Pennsylvania Engineers originate the Reversible Impactor, but they led all others by originating such things as Adjustable Breaker Blocks (patented), Renewable End Disc Liners and the famous Pennsylvania Breaker Block Contour. The great developments in crushing design are still coming from Pennsylvania!

### PENNSYLVANIA CRUSHER DIVISION

Bath Iron Works Corporation  
West Chester, Penna.

# PENNSYLVANIA

## REVERSIBLE IMPACTORS



## Precious Jewel of Industry's Future

"Black Diamonds" are America's most valuable resource for today and tomorrow! Only Bituminous coal can fully meet industry's needs for more electrical energy and more plant-power.

Convenient reserves of B&O Bituminous offer an unlimited supply of coals for every purpose, at low-cost. *Ask our man!*

LET OUR COAL TRAFFIC REPRESENTATIVES  
suggest a B&O Bituminous for your needs.

COAL TRAFFIC DEPARTMENT B&O RAILROAD  
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### BALTIMORE & OHIO RAILROAD

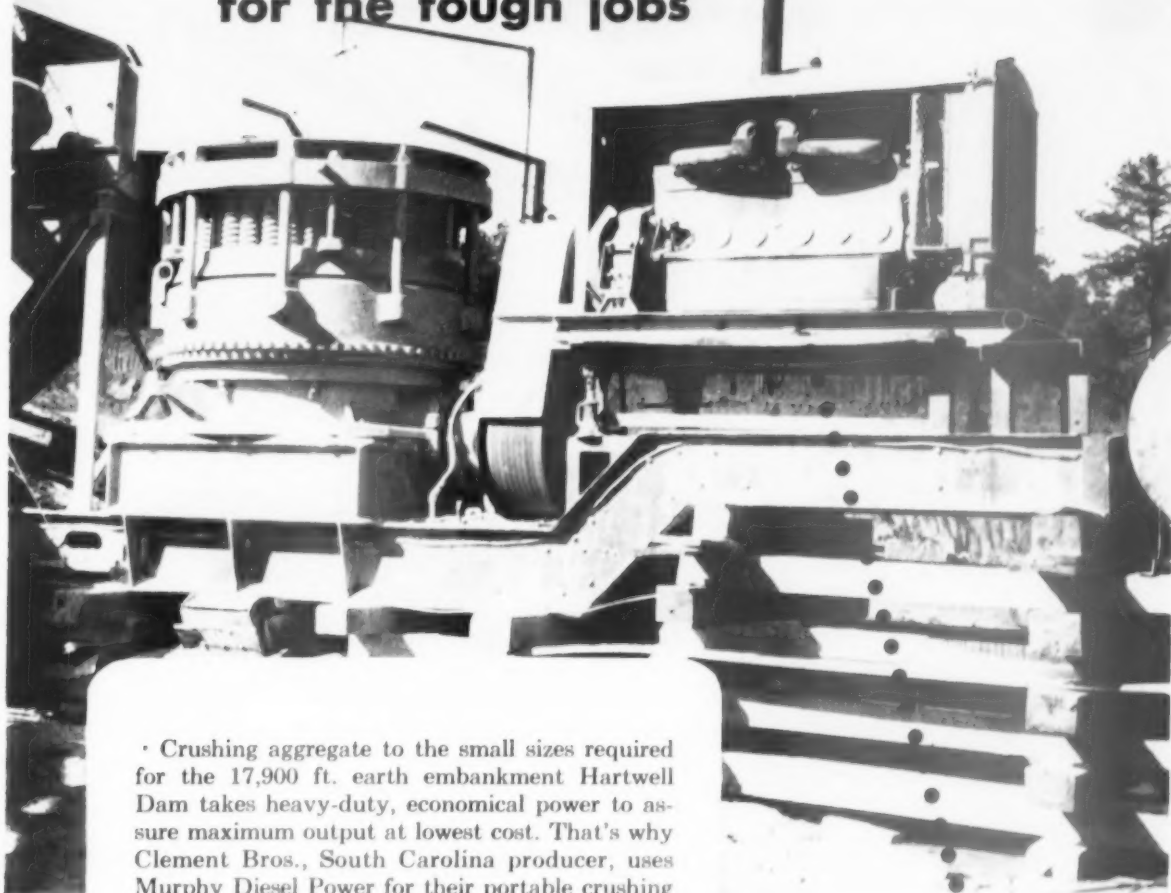
**Bituminous Coals For Every Purpose**





# MURPHY-DIESEL POWER

for the tough jobs



Crushing aggregate to the small sizes required for the 17,900 ft. earth embankment Hartwell Dam takes heavy-duty, economical power to assure maximum output at lowest cost. That's why Clement Bros., South Carolina producer, uses Murphy Diesel Power for their portable crushing and screening unit operating near Hartwell, Georgia.

When it comes to heavy-duty service, you can't beat Murphy Diesels for their dependability, fuel economy, trouble-free operation and long life, *unmatched by any other engine of comparable size*. Ask your Murphy Diesel Dealer to explain Murphy's many exclusive advantages before you decide on an engine.

37180



**HEAVY-DUTY POWER**  
for Rock Crushing

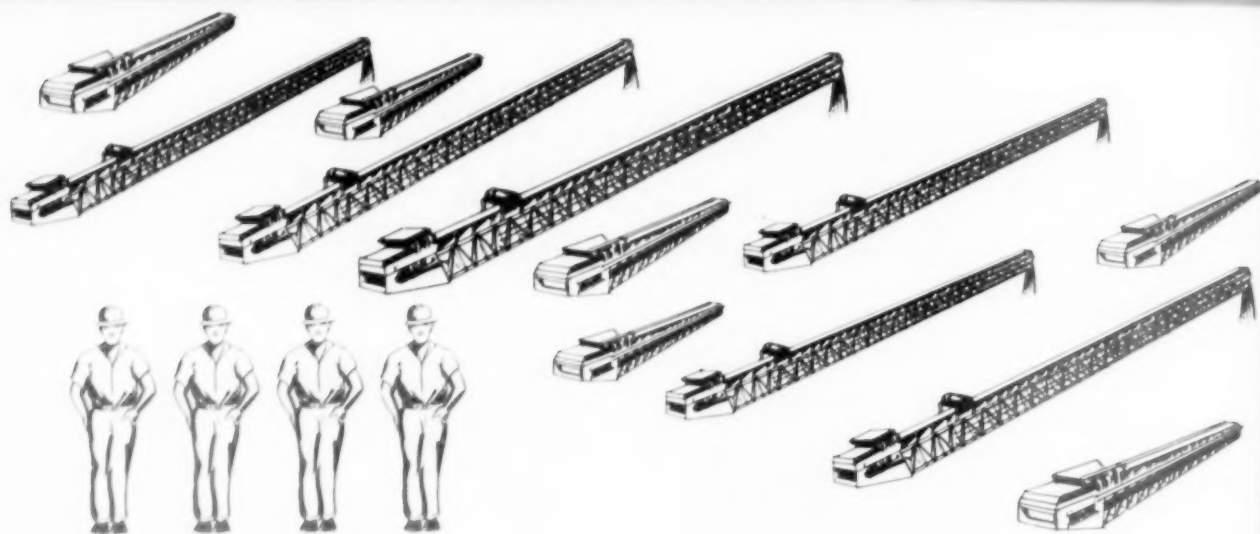
Murphy Diesel engines and power units are available in sizes from 96 to 264 H.P. with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 64 to 165 K.W.

## MURPHY DIESEL COMPANY

5315 W. Burnham St., Milwaukee, Wisconsin

SALES . . . PARTS . . . SERVICE

Throughout the Nation



## Four men and an army of conveyor belts mine a 75-million ton deposit

**I**N AN AREA WHERE THE SHORTAGE of material has forced some operators to remove 15 ft. of overburden to work a 20-ft. stratum of gravel, the Ross Sand and Gravel Co. of Apple Grove, Ohio, has found a 75 million ton deposit which it is handling with four men and a forest of conveyors.

The Ross plant is divided by Ohio State Route 338. The working pit lies north of the highway. When operations began early in 1956, a 2-cu. yd. clamshell delivered the bank material into a Barber-Greene reciprocating feeder positioned over the first of two 24-in. x 100-ft. field conveyors. These two conveyors were jackknifed to start and then fanned out 180 deg. as the excavation of sand and gravel progressed.

With this setup, it has been possible for the clamshell to operate for months at a time with very little movement upon its crawlers. Rain or inclement weather caused far less of a problem to production than would have been the case with haulage equipment. Out of the past year's operation the Ross plant with a rated capacity of 300 tph. was shut down for only one week by cold.

Since the initial operation, two 24-in. x 300-ft. belt conveyors have been added to the pit equipment, making total field conveyor length 800 ft.

The second 300-ft. conveyor discharges onto a single 500-ft. belt which immediately passes through a corrugated pipe tunnel passing under Route 338 to discharge onto a 7,500-ton surge pile lying south of the highway. This provides suffi-

cient capacity for approximately three days of plant operation. It is most frequently used when the four field conveyors are being repositioned.

Beneath the surge pile, a Syntron feeder places the material on a 24-in. conveyor belt, running through a 7-ft. diam. corrugated tunnel. This conveyor, 185 ft. long, carries the material up and into the washing, crushing and screening plant. Output through this feeder can be regulated from a few pounds to as much as 300 tons per hour to make sure the plant mechanism is operating smoothly before a full load is applied.









This No. 4 conveyor carries the material to two vibrating pool washing screens, where the material is scoured clean and the sand is separated from the gravel. Gravel over 2 in. is scalped and sent into the crushers, then back to the conveyor again.

The sand is flumed to a coarse, or concrete, sand classifier. This classifier removes sand down to 28 mesh. The discharge goes into a sump. From there a 6-in. rubber-lined pump pushes it up to a separator which removes all fines down to and including 200 mesh. This is positioned above the upper end of the classifier so that the fines are mixed back into the material being discharged to the sand conveyor. The percentage of water entering the coarse sand classifier determines the size or gradation and amount of fines passing over into the separator. The less water, the less fines leave the concrete sand classifier.

*Please turn to page 168*

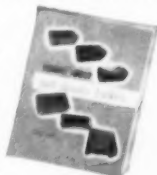
# For longer lifting life...

**LINK-BELT makes cast elevator buckets for a wide range of materials and capacities**

A COMPLETE LINE...	FOR VARIETY OF MATERIALS...	CORRECTLY DESIGNED...	WITH LONG-LIFE FEATURES
 <p>Style AA</p>	<p>Designed for handling coal, grain, chemicals, pulp, and similar materials. Recommended for especially heavy and gritty materials such as sand, gravel and stone.</p>		<p>Style AA cast elevator buckets are made with a wide, thick, reinforced lip for digging and greater resistance to wear and distortion.</p>
 <p>Style AA-RB</p>	<p>Handle same type materials as Style AA buckets. However, these are recommended for extra-heavy service conditions.</p>		<p>Style AA-RB buckets feature double-thick backs for greater strength against bolt pull-through, plus heavy "pick-up contoured" digging lip and reinforced ribs.</p>
 <p>Style B</p>	<p>Commonly used for handling coke, ores, stone, and other coarsely broken materials.</p>		<p>Style B cast elevator buckets offer the proper shape and low front to insure clean discharge at relatively low speeds. Designed for inclined elevators.</p>
 <p>Continuous</p>	<p>Designed for elevating coal, sand, gravel, crushed stone, and similar dry materials.</p>		<p>Continuous cast elevator buckets provide high capacities at low speeds. The flanged front acts as a chute for succeeding bucket—provides clean, gentle discharge.</p>

To obtain better performance, less downtime from your bucket elevators—choose the cast bucket you need from the complete Link-Belt line. They're available in malleable iron or Promal. All have reinforced corners for added strength—are designed for fast filling and quick, clean discharge.

See your nearby Link-Belt office or authorized stock-carrying distributor for facts. Ask for Book 2465.



**LINK-BELT**  
CAST ELEVATOR BUCKETS

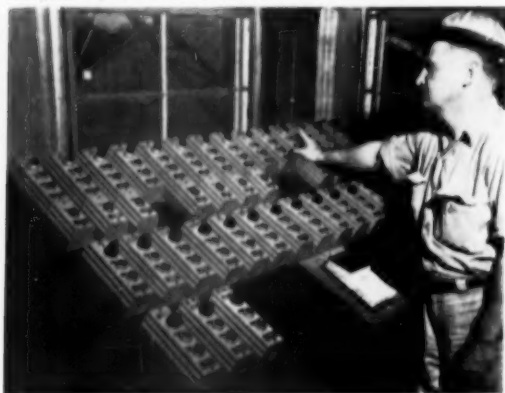
LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1, To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World.

Enter 1064 on Reader Card



Gravel after separation and washing is stockpiled at left and sand at the right

All plant operation is controlled from this panel



## An army of conveyors . . .

*continued from page 166*

The gravel, freed from the sand, passes onto a four-deck vibrating screen. Three sizes are removed and what is retained passes onto a 24-in. belt conveyor and then onto a second three-deck vibrating screen where the remaining sizes are re-

moved. Gravel sizes produced are at present  $1\frac{1}{2}$ , 1,  $\frac{3}{4}$  and  $\frac{3}{8}$  in.

From the sand screws and vibrating screens, conveyors carry the finished and practically dehydrated products to stockpiles separated by bulkheads. These stockpiles run parallel to the plant axis and are centered over 7-ft. diam. tunnels, made of 7-gauge galvanized pipe. The tunnels start 35 ft. north of the bank top of the river and extend back 300 ft., at right angles to the river. Under each stockpile there are three 16 x 16-in. double quadrant gates which empty onto a 30-in. tunnel conveyor. The downstream conveyor is 470 ft. in length, passes through the tunnel and out over the shore for discharge into river barges.

The outermost 66 ft. of this conveyor is hinged to permit a total rise and fall of about 6 ft. An electric motor hoist mounted on a heavy timber frame accomplishes the raising and lowering of the hinged section, as a means of compensation for the variation in water level.

The upstream conveyor is 250 ft. long. As it emerges from its tunnel, it discharges onto another conveyor, 30 in. wide and 160 ft. long, positioned at right angles to both tunnel conveyors.

*Please turn to page 170*





## **TRIPLE-FORGED, STEEL GRINDING BALLS...**

Are round... and stay round all through  
the grinding process, to assure  
uniform wear... Here is low  
cost grinding media  
with maximum  
efficiency.

Write today for prices...

All sizes— $\frac{1}{8}$ " to 5"  
carried in stock for  
immediate shipment.



# **COATES**

## **STEEL PRODUCTS CO.**

**GREENVILLE, ILLINOIS**

**LARGEST EXCLUSIVE MANUFACTURER OF GRINDING MEDIA**

ROCK PRODUCTS, August, 1957

Enter 1092 on Reader Card

169



Enroute to the surge pile, center right, the No. 5 conveyor passes through a corrugated pipe tunnel beneath Ohio State Route 338

## An army of conveyors . . .

*continued from page 168*

**Barges are loaded** from conveyors at this point



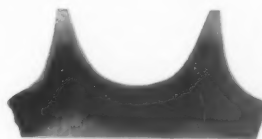
This one carries the discharge from the upstream tunnel conveyor over to the downstream belt, discharging onto it through a concentrating hopper. This permits withdrawing material simultaneously from the entire line of both stockpiles and also permits the various blendings of different sizes during loading.

A future plan for the installation calls for extension of the up-stream tunnel conveyor out past the shore line to provide two barge loading stations. This will permit the loading of sand into one barge and gravel into another simultaneously. A simple flop gate will divert the flow from the cross conveyor to the loading conveyor and vice versa.

The barges are moved up and downstream by hoists whose cables pass in an endless chain through blocks upstream and downstream. Tag lines are carried to the barges along the piling.

Screening has been designed to meet the generally known market demands. Should a large order with conflicting sizes occur, the stockpiles can be drained on previous orders, the screens changed and different sizes placed in the piles. Should a small order throw too much into one or two piles, a 100-ft. belt conveyor can carry the excess to a secondary stockpile. This conveyor is fed by a tractor loader. Whenever it is necessary to throw this secondary pile back into the original pile, the loader and conveyor are simply reversed.

*Please turn to page 194*



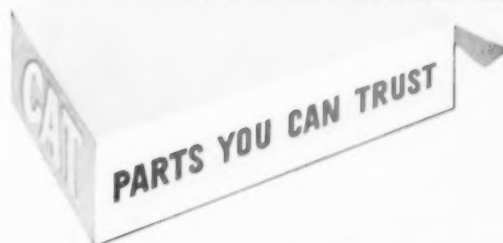
It increases sprocket life 50 to 100%! Got the name?—*Boralloy*. It's a new alloy which Caterpillar uses to make sprockets and replacement rims. It permits a minimum of 61% deeper hardening.

Result: CAT® BORALLOY sprocket teeth hold their contour longer. Teeth and track bushings *stay* in proper mesh, reducing wear and tear on all track running gear. Don't take chances. Get parts you can trust—see your Caterpillar Dealer today! Where else can you get the long-life benefits of Boralloy?

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

# CATERPILLAR\*

\*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.





Aerial view of Caribbean Cement Co. plant taken before commencement of the present expansion program

## While already in the process of expanding, a Jamaican cement firm decides to expand again

By THOMAS W. HILL\*



New main stores building in construction (background) and excavations for No. 2 kiln driving station (foreground)

**C**EMENT CONSUMPTION ON THE ISLAND OF JAMAICA has doubled in the last four years. The Caribbean Cement Co., Ltd. which now operates a 600,000 bbl. per year wet-process plant in the outskirts of Kingston, has been hard pressed to meet the demand. So fast has the market been growing that the company found itself in the unusual position of announcing plans for a third round of expansion to 1,800,000 barrels while busily engaged in a second round to double present capacity.

These figures seem all the more remarkable when it is realized that the island's average annual consumption in the five years before 1952 was only 300,000 barrels. When the Jamaica plant started operating in 1952, a 600,000-bbl. plant seemed adequate to take care of the demand for many years, with some initial surplus for export. However, as early as 1955 Jamaica was already using more than the rated capacity of the plant.

Fast-paced industrial development programs in an area that was renowned principally for rum,

\*Mr. Hill is president, Canadian and General Development Corp. and director, Caribbean Cement Company Limited.

Please turn to page 174



# EXPLOSIVES



# RESEARCH



# PAYS OFF



There's no substitute for the right combination of explosives materials and the "know-how" for getting results that save both time and money. Hercules has specialized in the pioneering of improved explosives techniques for more than 40 years. We will be glad to assist you in selecting the right materials and blasting methods to meet your particular requirements.

## HERCULES POWDER COMPANY

Explosives Department, 500 Kin's Street, Wilmington 99, Delaware  
Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.;  
Joplin, Mo.; Los Angeles, Calif.; New York, N. Y.; Pittsburgh, Pa.;  
Salt Lake City, Utah; San Francisco, Calif.



Circle 15



Arrival of the No. 2 cement mill on the site

## Jamaican cement firm

*continued from page 172*

sunshine and beautiful beaches, is one reason for this unusual growth in cement usage. Another reason is the unwritten economic law, well known to cement men everywhere, that when comparatively low-cost cement becomes readily available in an area which previously had to rely on higher priced imported supplies, consumption is bound to climb steeply.

The Caribbean Cement Co., which was one of Jamaica's industrial pioneers, can take part of the credit for the island's current industrial growth. Certainly a general program of industrialization could hardly be successful if locally manufactured cement were not available. In five years the cement company's operations have benefited Jamaica's visible trade balance to the extent of more than \$10 million. They have saved Jamaicans almost \$3 million premium which they would have had to pay for imported cement.

The order of priority in the company's present expansion program has been governed by the need to meet the soaring cement demand at all times until the second kiln is installed. With some excess grinding capacity, the company has been able to increase its salable product by importing clinker

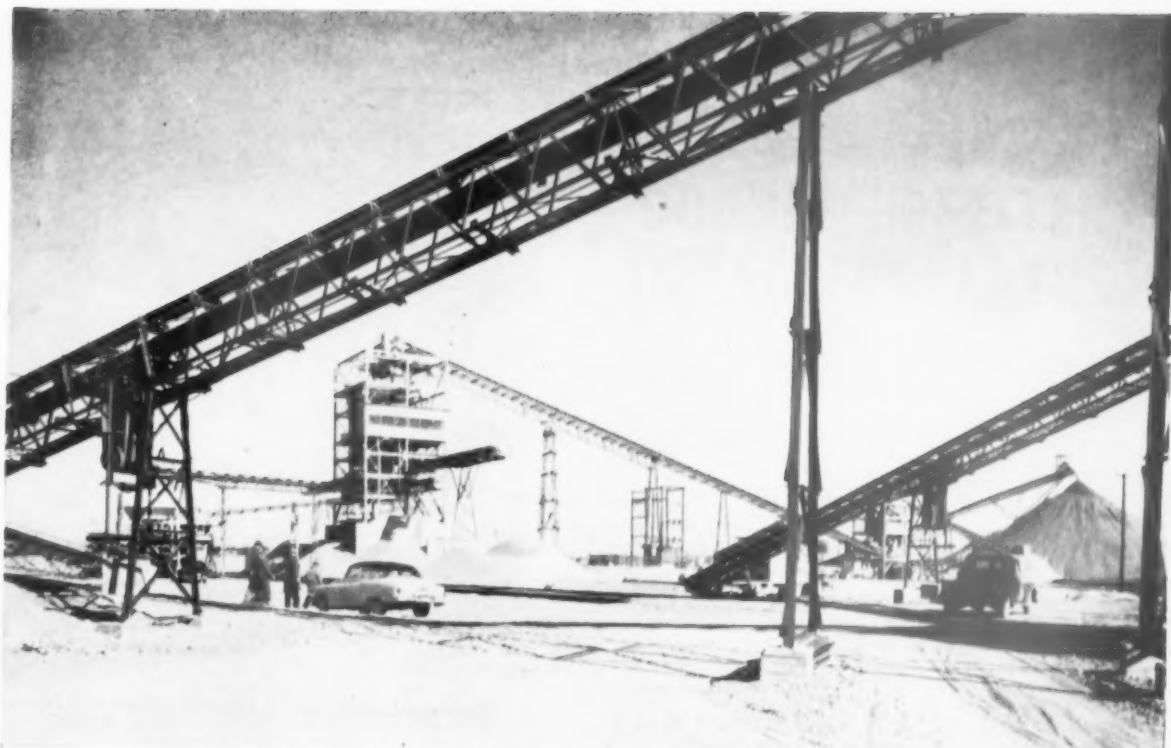
to supplement its own production. But demand has now passed the extra production made possible by this excess grinding capacity and the company began importing some cement at the end of 1956.

Obviously one of the most urgently needed items in the expansion program was a second grinding mill to enable the company to increase clinker imports temporarily rather than to continue to import finished cement. Accordingly, No. 2 cement mill was ordered for quick delivery and will be installed by August of this year. It is an 8 x 36-ft. three-compartment Unidan mill which will be driven by a 900-hp. motor through a Symetro gear unit. This mill will be a duplicate of the existing No. 1 mill.

Certain early stages of the construction program were undertaken in 1956 before the program as a whole was finalized. A second 4,200-cu. yd. slurry basin was completed last year and a third 650-cu. yd. slurry silo. These improved plant flexibility somewhat and gave additional assurance that maximum possible production would be maintained during the present critical period.

Additional storage for finished cement will be needed when the No. 2 mill is completed, so that

*Please turn to page 176*



This shows a portion of one of the year's outstanding conveyor jobs . . . Consumer's Company, Crystal Lake, Illinois.

## It's not true that Barber-Greene invented the belt conveyor

. . . but it is true that Barber-Greene introduced the greatest advance in belt conveyors since their invention—*standardization*.

Before Barber-Greene entered the field in 1916, belt conveyors were economical on paper—costly to build. Most installations were tailor-made, involving slow single-unit production . . . expensive field engineering . . . complicated assembly.

Then Barber-Greene developed a unique system of standardized conveyor components that quickly outdated ordinary methods of erection, operation and maintenance. Soon standardized conveyors were known for:

**Faster delivery.** Packaged units come from dealer stock or are immediately available from the factory.

**Low-cost erection.** Conveyors get into operation sooner with big savings in engineering costs.

**Unmatched flexibility.** Interchangeable parts simplify lengthening or shortening of conveyors to meet changing needs.

Today, standardized components are practical for in-

stallations of nearly every length, width and capacity. Wherever used, they give a new meaning to conveyor economy, utility and flexibility.



Drives, take-ups and similar units are completely assembled, aligned and adjusted by experts at the factory to assure trouble-free operation.

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# Barber-Greene

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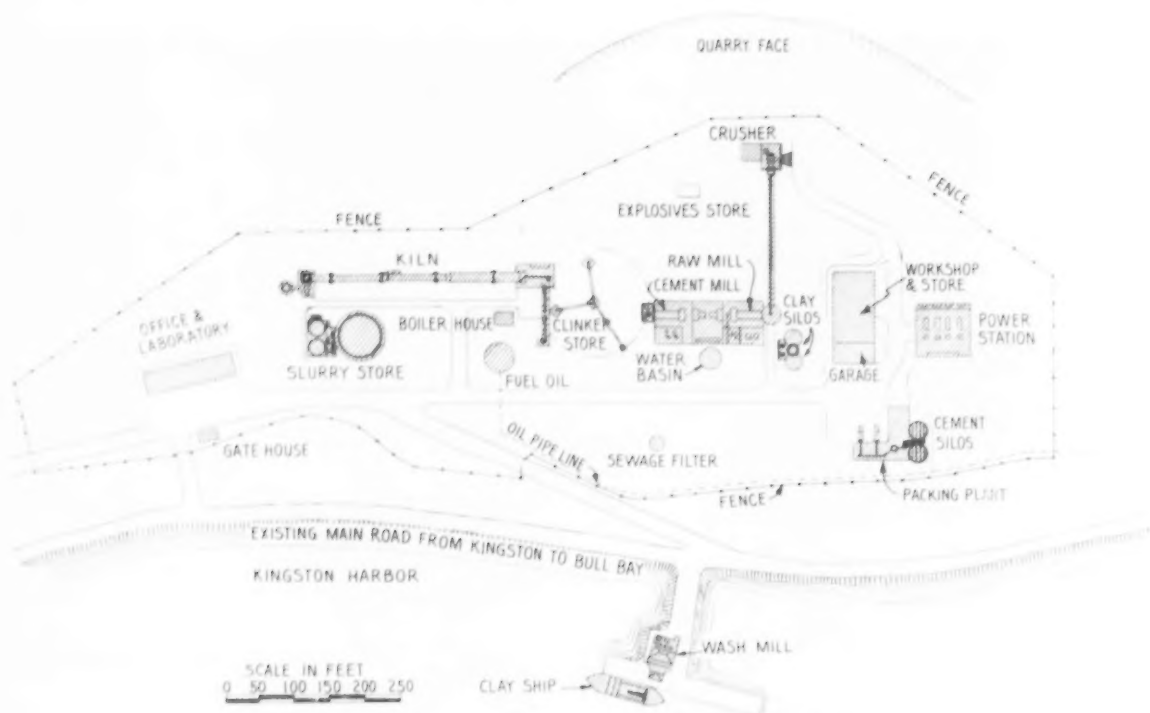


CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

ROCK PRODUCTS, August, 1957

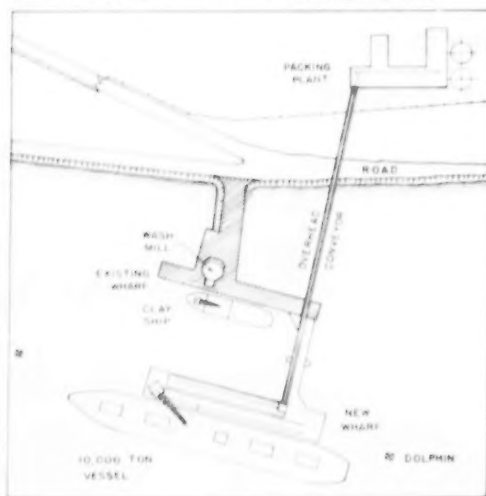
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175



Plant layout before present expansion program was started

**Sketch plan of wharf extension.** The new wharf, served by an overhead belt conveyor, will make possible loading of cement on ocean-going vessels



## Jamaican cement firm

*continued from page 174*

the first work undertaken at the beginning of this year was the construction of silo No. 3 having a capacity of 1,500 tons. Other work completed or currently under way includes:

- the construction of No. 2 clinker hopper
- the erection of a new main stores building
- site levelling and excavations for a new cement mill building, new raw mill building, power

plant extension, kiln foundations and chimney for No. 2 kiln.

By early in 1958 cement silo No. 4, slurry silo No. 4, chimney No. 2 and the cement mill building and raw mill building will be completed. Then work will proceed on the installation of No. 2 kiln, electrostatic precipitator No. 2, dust return machinery for No. 2 kiln, three new generators in the power plant extension, No. 2 packing machine and an extension to the packing plant building.

With these developments in prospect it seemed logical that the company should build a deep water wharf to load ocean-going vessels for the export trade. Work will start this year on a new deep water wharf to accommodate vessels with a draft of 35 ft. An overhead conveyor will carry bagged cement from the packing plant to covered storage on the wharf. There it can be stored and readily loaded on ocean-going vessels.

The Jamaica cement factory is especially favorably situated in relation to the supply of all raw materials and fuel. Limestone is quarried from a mountain directly behind the property. Siliceous clay is dredged from the mouth of a river about nine miles from the plant. The clay is transported, 500 cu. yd. at a time, in the company's clay dredger which unloads into a wash mill on the existing wharf in front of the factory. This wharf was built primarily to dock the company's clay dredger.

*Please turn to page 178*



More and more cement companies are turning to

## CEDARAPIDS DOUBLE IMPELLER IMPACT BREAKERS

*Here's Why!*



**5360 H DOUBLE IMPELLER IMPACT BREAKER** turns out 1000 tons of limestone per hour in Kansas. Cedarapids Vibrating Grizzly, 5 Horizontal Vibrating Screens and 4 Hammermills, plus conveyors, complete the plant.

**IN MONTANA**, a 3042 Double Impeller is reducing wet quarry-run limestone, containing 4% silica, to  $\frac{3}{4}$ " minus. The owner says "It's ideal equipment for this kind of rock."

**AT A CEMENT COMPANY'S QUARRY IN MICHIGAN**, a 5360 Double Impeller is reducing extremely hard quarry-run shale to 3" minus. Operating 8 hours a day, the unit requires practically no maintenance.

● **BIG TONNAGE PRODUCTION** . . . Up to 1000 tons per hour output meets capacity demands to supply today's expanding market.

● **HIGH RATIO OF REDUCTION** . . . 40 or 50 to 1 reduction ratio cuts production costs. Cedarapids Double Impellers, which reduce 53" diameter material to minus 3" in one pass, are often used for simultaneous primary and secondary reduction, thus reducing the need for auxiliary secondary crushers, screens, conveyors, etc., and cutting power requirements.

● **LOW MAINTENANCE COSTS** . . . With rock fed from the highest point of the unit, the entire breaking chamber is utilized for breaking rock in suspension. Incoming rock is struck and broken by rock hurled upward and outward at terrific speed by oppositely rotating impellers. There is approximately 50% less contact of stone on metal, thus reducing wear on impellers and breaker bars.

● **TRUE IMPACT ACTION** . . . The discharge opening is wider at the discharge end to eliminate any possibility of scrubbing action or pressure crushing that result in excessive wear and high power consumption. Breaking is accomplished only by impact of rock against rock and against breaker bars and impellers.

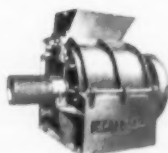
**IOWA  
MANUFACTURING COMPANY**  
Cedar Rapids, Iowa, U.S.A.

**Cedarapids**

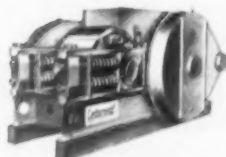
Built by  
IOWA

These are but a few of the many Double Impeller features that help cement companies step up output and cut production costs for crushing limestone and shale. See your Cedarapids distributor for complete details about *all* Double Impeller Impact Breakers.

CEDARAPIDS SERVES THE CEMENT INDUSTRY WITH A COMPLETE LINE OF EQUIPMENT



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**ROLL CRUSHERS**, in 8 sizes with 3 types of roll shells, insure high capacity of the smaller size finished products you want.



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**HEAVY-DUTY FEEDERS** designed to feed big crushers with a smooth, workable flow of material, and withstand the shock of heavy dumping.



Early stages of work on the foundation for No. 2 cement mill and clinker hopper

## Jamaican cement firm

*continued from page 176*

er, and now can accommodate vessels with a draft up to 15 ft.

The capacity of the existing wash mill and dredger is adequate to supply the clay requirements of the enlarged plant, so these items were not duplicated in the expansion program. An additional substantial clay deposit has been located on land near the plant. In the event that the dredger should be temporarily out of commission at any time, the clay pit can be worked with existing digging equipment.

Gypsum is purchased from gypsum deposits within a few miles of the cement plant. Fuel oil is supplied from a tank farm located in the vicinity of the cement plant.

The limestone is hauled a few hundred yards from the quarry by 15 cu. yd. dump trucks and dumped into a concrete hopper. A 5 x 27-ft. apron conveyor feeds a 60 x 70-in. hammermill, driven by a 175-hp. motor. This hammermill has ample capacity to handle the additional limestone required for the enlarged operation.

Reduced to minus 1-in. size by the hammermill, the limestone is conveyed approximately 200 ft. to a silo. It is fed from there into the existing raw mill by a 6-ft. diam. rotary plate feeder. Number

2 raw mill will be a duplicate of the existing mill.

In general, No. 2 kiln will be a duplicate of No. 1 kiln but will incorporate the manufacturer's latest improvements. The kiln on order is a 10 x 300-ft. rotary kiln, with an enlarged burning zone approximately 11 ft. diam. The new kiln will be driven by a 100-hp. electric motor through a reduction gear.

**In the existing installation** the clinker passes from the kiln through a Folax cooler and is conveyed by a drag chain conveyor to the clinker storage pile. The new kiln will have the same general arrangement. Two short drag chain conveyors (one as standby) will feed the clinker into one of two inclined drag chain conveyors and from there to the clinker store.

Because there is very little rainfall in the area (30 to 35 in. precipitation in the vicinity of Kingston), the Caribbean Cement Co. plant stores clinker, limestone and gypsum in the open. Gypsum is stored near the clinker and both are fed into hoppers on the outside of the mill building with a 7-ton jib crane. The present crane has a capacity adequate to handle the output of both kilns.

*Please turn to page 196*



**Gold E. Lindauer**  
PRESIDENT  
THE LINDAUER CORP.  
LA HABRA, CALIF.

## **This No. 955 Traxcavator\* loads 750 yards a day and "that doesn't begin to make it work"**

Each 7½-hour day, this new CAT\* No. 955 Traxcavator loads about 750 yards of sand for construction work at Lindauer Corp., La Habra, Calif. It also handles decomposed granite and topsoil. Mr. Lindauer likes its high production and speed of operation.

"We like everything about this Traxcavator," he says. "The hoist works fast and you don't have to sit and wait for it. It's loading 750 yards a day and we haven't really begun to make it work."

Operators like the way this unit handles, too. Bucket lift and tilt levers are positioned for easy one-hand operation. And the exclusive Caterpillar oil clutch reduces maintenance and adds to the machine's long, productive work life.

This fast 75 HP excavator loader has a 1½-cu.-yd. bucket, 80 inches wide. The bucket has full 40-degree

tilt back at ground level to prevent spillage. And its 128-inch lift height makes easy loading for trucks.

There are three Caterpillar-built Traxcavators. The smaller No. 933 has a 1-cu.-yd. bucket and a 50 HP Cat Diesel. The larger No. 977 has a 2¼-cu.-yd. bucket, powered by a 100 HP engine.

Your Caterpillar Dealer will demonstrate the model that fits your exact needs on *your* job . . . at *your* convenience. And he backs each machine with 24-hour service, and quality factory parts.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

# **CATERPILLAR\***

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## ATHEY TRAILER FACTS . . .

Trailer-Tractor	Capacity
Athey PR21-Cat DW21	34-tons, 22.5 cu. yds.
Athey PR20-Cat DW20	34-tons, 22.5 cu. yds.
Athey PR15-Cat DW15	22 tons, 15.6 cu. yds.
Athey Hydraulic Ejection-Cat DW21 (or DW20)	31-tons, 22.5 cu. yds.
Athey PD20-Cat DW20	30-tons, 22 cu. yds.
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By JACK E. BEDFORD\*

# YOU

## can build better employe relations

**Y**OU CAN BUILD BETTER EMPLOYE RELATIONS in your plant if you use the **right word** at the **right time** when talking to your employes. It is easier to make this statement than it is to put it into practice. Here are some ideas you can use to put word magic into your day-to-day dealings with your employes . . . words that will work wonders in building better employe relations for you.

YOU, YOU, YOU. Song writers Robert Mellin and Lotar Olias who penned the lines for the popular tune, "You, You, You," employed word magic in the title. It has natural and universal appeal. When a romantic young man hears a beautiful girl sing the song, he hears the "you, you, you," as though the girl were singing, "me, me, me."

Plant supervisors and foremen can borrow a page from this fundamental principle of human relations and woo their employes with the powerful words—YOU, YOU, YOU. They hear the word "you" and it comes out "me." This psychology automatically puts the employe into the picture and he is more responsive to the ideas and suggestions you make.

**Here's a simple little experiment** you can try to check and to improve your YOU-ability. Describe some work assignment to a worker in about seven short sentences. Keep your description specific,

but be brief in the way you describe the duty to the new worker.

Count the total number of words you have used to describe the assignment you selected for this experiment. Count the total number of times you used the words "you" and "your." Divide this by the total number of words used in your description. This will give you your YOU-ability score. Ten is considered good.

Now add the word "you" to each of the seven sentences in your original description. This may require a change in the sentence, but be sure to keep the same thought when a "you" is added to the sentence. This addition of the word "you" changes the tone of what you said. You will be making your work assignment in terms of your employe's viewpoint. Word magic will get the kind of cooperation you want in your plant.

You may feel that you can use "you" too many times in handling work assignments. When you first start to apply this word magic in your human relations problems, you will be very conscious of the number of times you use "you." While you may get the idea that you are putting too much emphasis on the "you" idea, you will find that your employes are not conscious of the strong use of "you" in your instructions. They will develop a cooperative attitude, but will not know exactly

*Please turn to page 198*

\*Professor of management at Armstrong College, Berkeley, Calif.

Are  
you good  
at  
figures?

### EXAMPLE 1

#### Valve Bags for Granular or Pulverized Materials

If you increased filling production from 12 per minute to 15 or more per minute—without paying a penny more for sleeve or special insert bags... what would be the percentage of increase—and dollar savings to you—per ton—per hour?

### EXAMPLE 2

#### Open Mouth Bags for Free Flowing Materials

If you increased filling production from 15 per minute to 20 or more per minute—without paying a penny more for your open mouth multiwall bags... what would be the percentage of increase—and dollar savings to you—per ton—per hour?

## KRAFT BAG CORPORATION

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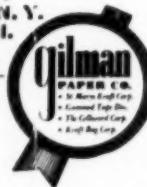
- ☐ We are interested in Example 1.  
☐ We are interested in Example 2.  
☐ We are interested in both examples.

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Dependable as a service for 3 generations. Exclusive Sales Agents for the Kraft-packer Automatic Filling Machine and one of the largest integrated producers of multiwall bags with plants in St. Marys, Georgia and Gilman, Vermont, manufacturing every type of multi-wall bag in use today!



Part 3 in a series

# Safety and the hourly employe



how important is the part he plays?

By C. A. GUSTAFSON\*

**M**ANAGEMENT AND FOREMEN ALONE can't make a safe plant. It is teamwork that counts, and without the help of the hourly worker the team is doomed to failure.

It is this worker who loses most when an industrial accident occurs. First, of course, he suffers physical pain and in many cases loss of limb. Second, an economic loss (compensation never pays his full week's salary) not only entails hardship on himself but his entire family.

The hourly worker certainly should be able to assume that management has supplied all the necessary guards, personal protection and instructions to safely carry out his job. However, after being on the job for a period of time he relaxes, because the old adage holds true: "Familiarity breeds contempt." Here he makes his first mistake.

**Safety will not allow any let-down on vigilance,** and when a let-down occurs, the chances are that an accident is in the offing. It may not happen the first time, but sooner or later neglect will lead to an accident.

We spoke of the part foremen should play, in a previous article, and how necessary it was for the foreman to train his men in the safety of their particular jobs as well as in the over-all safety of the

entire operation. However, as we all know, the foreman cannot be expected to stand over each man every minute of the day. A good employe will do his job as outlined by the foreman whether or not the supervisor is present. Unfortunately, there are people who feel that once the boss's back is turned, they should do just the opposite from what he told them. This type of employe should be watched closely, because he is not only irresponsible; he is dangerous. A mere bawling-out in this case is not only wrong from the dollar value but from the safety angle as well. He and his fellow workers are in danger, so straighten him out fast and make him "hew the line." Enlist the aid of the rest of the crew and he will change his ways.

The average hourly employe likes fun. But then who doesn't? However, fun on the job usually takes the form of horseplay and this must be stopped; or sooner or later you're going to be faced with a lost-time accident. Since most compensation boards are prone to make awards in such cases, it will probably cost you money as well, especially if they discover that supervisors condone or overlook such practices.

The hourly worker can make your plant safe. After all, he is the one that has an accident, not management. Safety is a selling job as far as both management and employes are concerned and when horseplay is condoned it grows mightily.

*Please turn to following page*

\*Mr. Gustafson is plant superintendent of Buffalo Crushed Stone Co., Boonville, N.Y. This is the third in a series of four articles he has written. See **ROCK PRODUCTS**, March, 1956, page 119 and August, 1955, page 162.

## Safety and hourly employe

*continued from page 183*

Each accident, as has been pointed out previously, costs the company money, even the "no lost-time" ones. Can an employe who deliberately breaks safety rules, takes chances or tries to thwart your safety program in any way be classed as loyal? A loyal worker tries to save the company money, and if through some negligence on his part he gets hurt, he isn't saving money; he "costs."

The average hourly employe is serious, painstaking in his work and will do everything in his power to increase production. But a few individuals make every supervisor's job that much tougher. Much of this can be nipped in the bud if the man knows that management, unions and supervisors will not stand for anything "not in the book." The hourly worker is human and has human failings, and while management and foremen are not expected to scrutinize every move he makes, it is a challenge to them when he makes a "faux pas."

The hourly employe has more access to the faults of any operation than have either management or supervisors. Why? Because he lives at least one-third of his life with the equipment he is

operating and should be aware of each hazard that his job entails. Management and supervision should welcome ALL suggestions as to changes, repairs, etc. that will make the man's job safer. Many times, however, we find that men suggesting new ideas do not realize the expenses entailed, other problems involved or the over-all picture of management's plans. But, if a man finds a condition that can be rectified, he should be heeded, as that man knows what troubles he has to face daily. Management and supervision must make it clear that the hourly worker has a big part in the safety team, and it is through his cooperation in reporting hazardous conditions, that the plant can be made safe.

Safety committees are an important adjunct to any successful operation. The bulk of the members of such a committee are necessarily made up of hourly employes. This is one spot where he should be able to speak his piece. Listen to what he has to say and weigh his suggestions carefully. He is living and working with YOUR problems and smart supervision not only listens avidly to his comments but encourages him to make more.

This man may be the lowest paid member of the team, but actually he is the most important. Guard him as you would a pinch point and listen to his ideas. You'll be ahead in the long run.

END

## GARRISON POWER STEERING

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on all



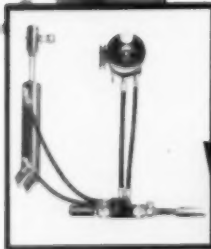
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**Pays for itself fast!** Operators buying CCC Trucks will be happy to know that Garrison Power Steering is now standard equipment on many models and optional on all others.

With Garrison Power Steering, hydraulic power does 80% of the work of wheel turning. Maneuvering in tight quarters, or in sand, rubble, etc., is accomplished quickly with only slight pressure on the wheel. Greater steering control enables the operator to deliver the load faster—do more in a day's time. Equipment takes less of a beating, because road shocks are absorbed by the power cylinder, reducing wear on the steering mechanism.

Be sure you get the advantages of Garrison Power Steering on your next CCC transit mixer or truck crane chassis.



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Garrison Power Steering is now available as standard or optional equipment for almost all makes of trucks, tractors, and off-the-road equipment, or in kit form for field installation. Get in touch with your Garrison distributor today.

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ROCK PRODUCTS, August, 1957

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## Ideal's manufacturing setup

*continued from page 118*

tion headed by George F. Wiley, chief engineer under the operations vice-president. As such, its main purpose is to control design and construction for modifications to existing plants, or for the entire development of new plants.

In the past 2½ years Ideal has expanded its engineering department nearly 5½ times to accommodate an \$80 million expansion and modernization program. This program has included such projects as the current construction of new plants at Houston, Texas, and Ada, Okla.; the design of new plants for Redwood City, Calif., and Tijeras, N.M.; enlargement and modernization of plants at Baton Rouge, La., Okay, Ark., and Boettcher, Colo.; new terminals at New Orleans and Lake Charles, La., and many other projects. At the present there are over 50 projects under design or construction.

With such a large-scale construction program, Ideal's engineering staff was not adequate to handle the complete program. Consequently, large projects have been contracted with outside engineering companies. Firm bids are always obtained, and all purchasing is handled by Ideal. On jobs of this type, the department's function has been that of coordinator. Ideal's management establishes basic requirements; engineering determines equipment sizes, with maximum production as well as ease of maintenance as requisites; engineering makes a flowsheet and the contracted engineering firm does the basic mechanical and structural design under the engineering department's direction. Smaller projects, however, are generally handled entirely within the department from design to completion.

Work on a new plant, or modification to an existing plant, may be initiated in several ways. A request will come from some plant in the form of an engineering requisition through the production department asking for an improvement to combat a deficiency in its system. Or the sales department often will show management a new market to be developed and will suggest plant development in some area; or the production department will indicate existing equipment to be inadequate because of obsolescence or insufficient capacity. In either event the engineering department is advised that the particular improvement be studied so that it can be submitted to management.

The suggested improvement is thoroughly analyzed within the engineering department; an engineering study is prepared incorporating the recommendations of the engineering department with a breakdown of the estimated cost of the

*Please turn to page 189*



ALLIS-CHALMERS  
ROD MILLS

## Convert Unsuitable Materials into Specification Sand

BY processing rock, coarse aggregate, and unusable natural sand, the Allis-Chalmers rod mill gives you specification sand *where and when you want it*. It extends the life of natural deposits. It eliminates the expense and inconvenience of distant shipments.

### Specification Flexibility

Meeting varying specifications with an Allis-Chalmers rod mill is merely a matter of changing feed, feed-water rate, or rod charge. Once mill is adjusted to produce a required product, it needs very little attention.

### Cubical Product

Rod mill action breaks long, flat particles . . . knocks corners off rough pieces, yet does not produce an excessively smooth particle. Size distribution is excellent. Product is ideal for use in concrete.

"Manufacturing" sand is a particularly tough, abrasive operation. That's why you'll want the Allis-Chalmers rod mill. It's a rugged machine that has proven most economical for grinding sand — in terms of long life and low operating costs.

For complete information, see your A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wis. Ask for Bulletin 07B6718A.

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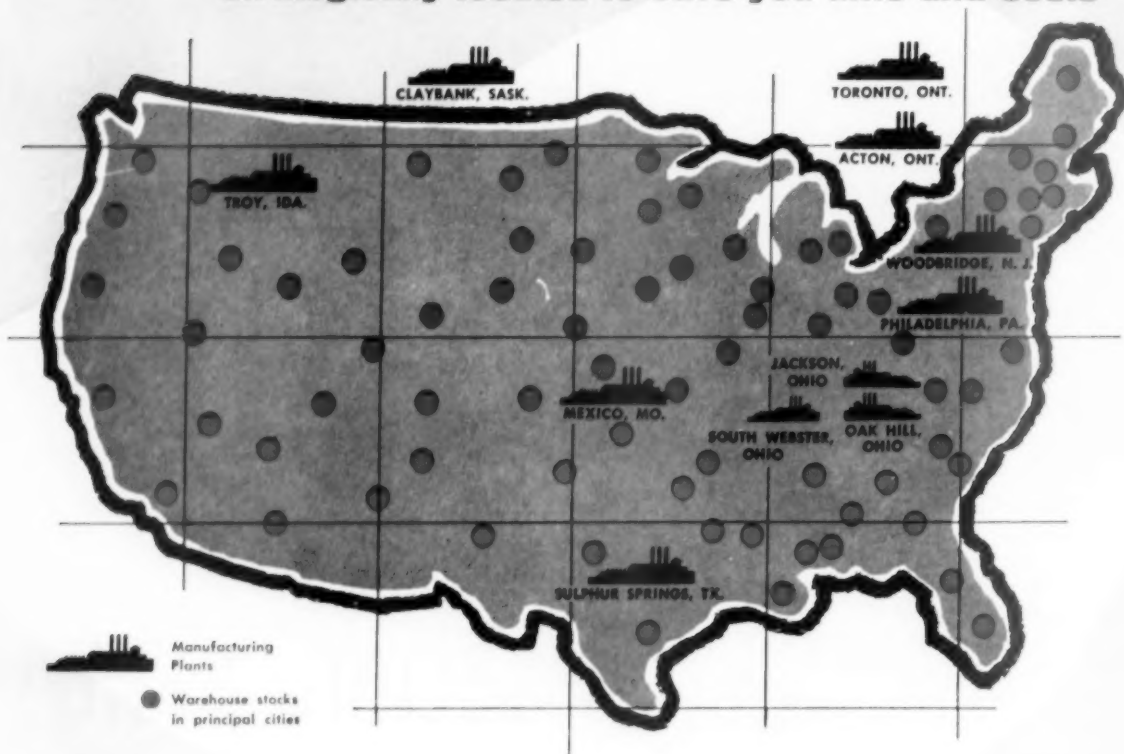
ROCK PRODUCTS, August, 1957

187

**A. P. Green  
REFRACTORY  
PRODUCTS**



**manufacturing and warehouse facilities  
strategically located to save you time and costs**



**11 A. P. Green manufacturing plants and warehouse stocks conveniently located throughout the United States and Canada, Save You Money 7 Ways.**

- **Lower Shipping Costs . . .** from nearby manufacturing or warehouse point.
- **Lower Capital Investment . . .** your capital is not tied up in warehouse space.
- **Lower Inventory Costs . . .** you need inventory only for immediate needs.
- **Lower Inventory Losses . . .** buy on current prices . . . less breakage while in storage.
- **Increase Production Space . . .** free storage space for profitable production.
- **Lower Labor Costs . . .** deliveries to point of usage . . . no inplant moving of stocks.
- **Maintain Steady Production . . .** reduce down time waiting for materials.

Your A. P. Green Distributor is Listed In The Yellow Pages of Your Telephone Directory, or write:

**A. P. GREEN FIRE BRICK COMPANY**

Mexico, Missouri, U. S. A.

**PLANTS:**

Mexico, Mo. — Woodbridge, N. J. — Sulphur Springs, Texas — Jackson, Oak Hill, South Webster, Ohio — Philadelphia, Pa. — Troy, Idaho.

**IN CANADA:**

A. P. Green Fire Brick Company, Ltd., Toronto 15, Ontario  
Distributors In The Principal Cities of The World



## Ideal's manufacturing setup

*continued from page 186*

project. Whenever possible, preliminary drawings, graphs or charts are included to clarify the scope of the work. In this capacity the engineering department can be considered as direct advisers to management.

With the acceptance and approval of the engineering study by management, more precise steps are outlined to cover planning, design and construction as defined by the authorized project. A project manager is assigned to the job with the responsibility to follow every phase to completion. He becomes the source of information within the engineering department for any question relative to the project. His responsibilities include the following: To have available the latest revised drawings; to check the drawings for errors or omissions; to approve or disapprove vendor drawings on the basis of design dimensions and conformance with the specifications; to check agreement of all structures with local and state building codes and, in the event of high structures, with the C.A.A. regulations; to coordinate the activities of the contractor and subcontractors with the engineering and purchasing departments; to keep the chief engineer informed on progress.

In carrying out these duties, the project manager works with five major subsections within the engineering department's organization: the structural, civil, mechanical, electrical and material sections.

The design section of the department under the head design engineer, and through the various subsections, is responsible for the complete design of all projects not given to an outside engineering firm. This includes all civil, mechanical, structural and electrical design work. In addition, the design subsections are charged with the responsibility of maintaining a close check on all the design work in their particular specialty, on all the engineering work performed by outside engineering firms, and they work very closely with the project manager on this phase.

One of the first steps with a new project is to establish a tentative schedule of activity. From this schedule, materials are requisitioned so as to be on the job site at the approximate time of use. Design engineering and drafting are planned to allow adequate time for drawings to be completed for bidding purposes.

The engineering department now assumes the responsibility of letting a contract for the project. One portion of this job includes writing a set of

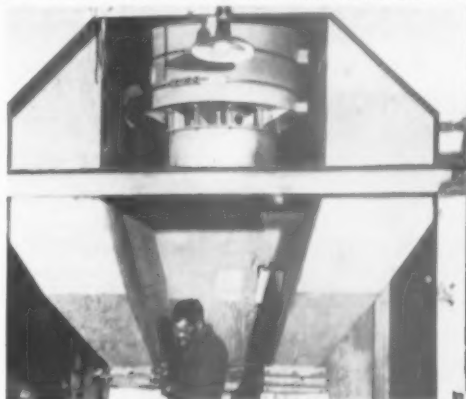
*Please turn to page 190*

## SCREENING NEWS



### SWECO Separator Screens One Ton of Perlite per Hour for Leading Rock Products Company

One of the larger processors of perlite - a new light-weight "wonder mineral" used as a plaster and concrete aggregate - had a screening problem. Because the material weighs only 4 to 8 lb. per cubic foot, it tends to float. The screen unit had to fit into a re-



*Unique Sweco Separator design imparts no vibration to supporting structure, permits dispensing of sized perlite from three levels into bins for bagging by processing company.*

stricted vertical space between existing cyclone collectors and bagging hoppers. Specifications called for a production rate of 500-1000 cu. ft. of perlite per hr. A 48" diameter Sweco Vibrating Screen Separator was installed. The unit, operated with either one or two screens, provides two or three gradations of perlite as desired. For flexibility, the equipment was furnished with screens of 8, 10, 14, 20 and 30 mesh. Routine lubrication has been the only maintenance required in three years of operation.

Another large perlite processor installed a 48" diameter Sweco Separator equipped with 30 mesh and 80 mesh screen cloths-regularly producing 30 cu. ft. per hr. of minus 80 mesh material.

Efficient, accurate sizing by the SWECO Separator enabled these companies to produce perlite for many new applications and to increase sales and profit.

### Screening Analysis and Recommendations Available

Your nearby Sweco District Engineer is available to help you with special screening problems. His "know-how" covers 200 different materials... wet and dry, coarse and fine, heavy and light. He will demonstrate, in your plant, how a SWECO Separator can screen your material economically and efficiently. No obligation, of course.

**A complete data file on screening rock products plus a 22-page catalog are yours for the asking. Write for Bulletin S-108-14.**



**SOUTHWESTERN  
ENGINEERING  
COMPANY**

4800 Santa Fe Ave., Los Angeles 58  
LUdlow 3-6262 - Cable: SWECOLA

*Engineers and Constructors . . . Manufacturers*

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**INCREASE OUTPUT,  
REDUCE COSTS**

With

**STANDARD**

**ELEVATING AND  
CONVEYING EQUIPMENT**

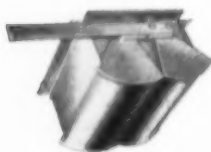
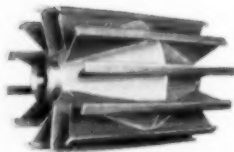


**CONTINUOUS ELEVATOR  
BUCKET STYLE No. 2**

This Standard Bucket provides outstanding service under severest operating conditions. It resists wear—assures longer bucket life and lower operating costs. This style of bucket is typical of the complete line of low-cost, rugged Standard Steel Buckets—available in Salem, Style "A," shelf type and other continuous style buckets.

**STANDARD WING TYPE  
SELF-CLEANING PULLEY**

Specify Standard Wing-Type Self-Cleaning Pulleys when ordering pulleys for your operation. They provide these six cost-cutting advantages—all-steel welded construction . . . lower cost . . . less weight . . . greater strength . . . greater resistance to breaking . . . longer life.



**STANDARD BIN GATE**

Material handling costs less . . . is faster, easier and more efficient . . . with this Standard all-steel gear-operated Bin Gate. Other types of Standard Bin Gates also available.

Reduce maintenance and material handling costs by converting to Standard equipment. Write today for catalog showing complete Standard line.



**STANDARD METAL MFG. CO.**  
110 CENTER ST. MALINTA, OHIO

SMI

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**Ideal's manufacturing setup**

*continued from page 189*

specifications, using accepted standards in industry such as federal, state or local requirements, and A.S.T.M., A.S.C.E., A.C.I. and similar codes, and the latest construction techniques. Included with the specifications is a bill of materials to designate the supplier of all of the basic items. Certain company standards, such as paint schedules, safety guards and access requirements, are also clearly defined. Just recently, Ideal has incorporated equipment numbers with items on the bill of materials to correlate new equipment with the commodity index systems used by the purchasing and production departments. This will aid in any future reference to specific items by a standard established throughout the company.

The specifications, along with a bid set of drawings, are sent to all qualified contractors who have expressed a desire to bid on the particular project. In addition, complete sets are sent to various plan rooms in large cities in the immediate area. Upon receipt of the proposals from the various contractors, they are analyzed and the contract is let.

After a contract is let for construction and the construction is started, the engineering department relies upon the project managers and construction superintendents and their staff of construction engineers for coordination of field work and the engineering designs. Project managers are primarily assigned individual projects and follow these to completion. Construction superintendents are assigned engineering supervision over field construction work involving several projects on which a project manager has not been designated. All drawing changes during construction are corrected in the Denver office or by the outside engineering firm. The field representative is responsible for the successful completion of the construction program by the contractor in compliance with the drawings and specifications.

Upon completion of the contractor's work, the equipment is tested; upon satisfactory performance, it is accepted and turned over to the production department. All records, including specifications, construction drawings, pertinent correspondence and contract documents, are kept as a permanent file in the engineering department.

The performance of the engineering department during the current accelerated expansion and modernization program can be termed as coordinator. However, as heavy construction eases, this department will be self-sufficient to the extent of being able to complete the design, as well as to supervise the actual construction, of entire projects.

**END**

DIAMETER OF CAN OR CARTRIDGE	LOADING DENSITY: POUNDS PER FOOT OF BOREHOLE		
4½	9.6	11.0	12.5
5	11.8	14.5	15.8
5½	14.2	17.5	19.3
6	17.0	20.8	22.5
6½	19.9	24.5	26.5
7	23.1	28.0	30.8
7½	26.5	32.5	35.3
8	30.2	37.0	40.0
8½	34.0	41.3	45.0
9	38.2	45.3	49.0
	SPECIAL GELATIN 75%	"NITRAMEX" NO. 2	"NITRAMEX" 2H

**Now A New Hard-Hitting Blasting Agent,  
for tough shooting... better breakage**

## Du Pont Heavy "Nitramex"<sup>®</sup> No. 2H\*

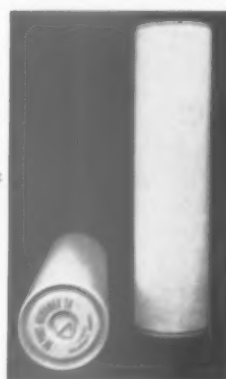
For quarry shooting where tough bottoms and formations have proved hard to overcome, Du Pont now offers a higher density "Nitramex" No. 2, called "Nitramex" No. 2H.

In field tests this new product has produced noticeably better breakage in such tough shooting material as granite, trap rock, basalt and hard, dense dolomite. Because it also has infinite water resistance, it may be loaded in wet holes as long as necessary before shooting.

The new heavy "Nitramex" No. 2H has a density of 1.80 compared to 1.60 to 1.65 for regular Du Pont "Nitramex" No. 2. The smallest size currently available (4½" x 24") weighs 25 pounds compared to 22 pounds for the regular "Nitramex" No. 2. "Nitramex" No. 2H can be consistently detonated with maximum safety by either a "Nitramon" or a "Nitramite" primer.

For technical information on this newest, strongest member of the Du Pont family of blasting agents, contact your Du Pont Explosives representative or write E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Del.

\*PATENT APPLIED FOR



### DU PONT BLASTING AGENTS

Products of Du Pont Research



BETTER THINGS FOR BETTER LIVING... THROUGH CHEMISTRY

## Bright business opportunities in Australia, visitors report

IF YOU ARE INTERESTED in the rock products or concrete products industries, or in the manufacture of equipment to supply them, Australia would seem to be the "land of opportunity"—and will remain so for the next 10 years. That's the report of a special mission of 11 Australian business and civic leaders, who visited this country recently to encourage American investment in Victoria.

Richard Raymond Buxton, chairman of directors of Stanley Quarries

and a member of the mission, reported a proposed expenditure of \$3½ billion for roads alone in Australia during the next 10 years. Expenditures will be at least that much for construction other than roads for the period, bringing total construction dollars to be spent to near \$10 billion. That's a sizable market for a country with only 10 million people now.

There's a great wave of industrial expansion in the country "down under." The mission reported that op-

portunities for equipment manufacture are exceptional—enough so to already have attracted 750 American firms that have \$600 million invested in that country.

**Resources, labor and markets** are plentiful, but Australia needs capital to get the production ball really rolling. Because of the great demand for equipment and goods, and the apparent lack of competition in supplying them, it is reported that American firms are realizing 30 percent on investments that they have made in enterprises in Australia.

Caterpillar Tractor Co. has invested \$13 million in a factory at Melbourne, and the company already is building earth moving equipment there.

**Apropos of this subject**, Louis B. Neumiller, Caterpillar's chairman of the board (the company was host to the Australian mission for two days during its visit to the United States), commented that "the future of Australia is extremely bright. We are enthused about what American firms are doing in investment there."

As guests of Caterpillar the "Promote Victoria Mission" inspected manufacturing facilities at Peoria.

Later visits took the group to Detroit, Canton (Ohio), Pittsburgh, Boston, New York, Philadelphia and Washington, D.C.

**The mission was headed by Maurice Nathan**, a member of the Melbourne City Council, a leading businessman of the city and recently chairman of the Olympic Civic Committee.

Other members of the "Promote Victoria Mission" included the following men, representatives of Australian industrial and financial circles: T. J. Buchan, architect, Melbourne City Council member; Richard Buxton, senior partner of J. R. Buxton & Co., real estate agents, and also of Stanley Quarries; John Clemenger, president of Australian Association of Advertising Agencies; R. Roy Macartney, editorial manager, Herald & Weekly Times Ltd., Melbourne; George Pethard, leading provincial manufacturer; Oliver C. Shaul, managing director of Federal Hotels Ltd.; Hugh Williamson, general manager of Australia and New Zealand Bank Ltd.; Roy V. Butler, managing director of R. V. B. Engineering Products Ltd.; Geoffrey D. Brown, partner, Ian Potter & Co., stockbrokerage; and Donald L. Chipp, director, Victoria Promotion Committee.

A satisfied customer writes about JOY  
**LIMBEROLLER**  
Belt Conveyor Idlers:



LIMBEROLLERS, at work on conveyor at Massachusetts Broken Stone Company.



"Early in 1955 we decided to try four Joy Limberollers on the No. 1 slope conveyor from the primary gyratory crusher in the quarry.

"This conveyor carries the product of the primary crusher set at about 5', on a 12 degree slope and running at about 450 feet per minute. Originally designed for 400 ton per hour capacity, there have been surge loadings of twice this amount.

"While the balance of the conveyor system is the enclosed gallery type, the No. 1 slope conveyor was not fully completed before the start of production season and consequently ran all year exposed to all kinds of weather.

"The Limberollers have carried a few hundred thousand tons of heavy stone with absolutely no maintenance. On the basis of this record we have placed repeat orders."

*Richard Robinson*

Richard Robinson, Treasurer  
MASSACHUSETTS BROKEN STONE COMPANY

The Joy Limberoller resists dust, abrasion, corrosion and material buildup. Resilient discs on a flexible steel cable conform to load and cushion the belt. Only two bearings are used and these are up out of the dirt zone. Get details from Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Ltd., Galt, Ontario.



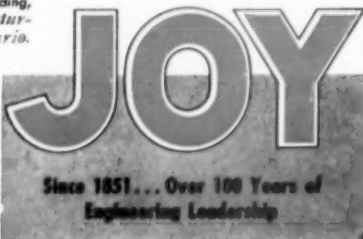
Write for FREE Bulletin 136-77

Consult a Joy Engineer

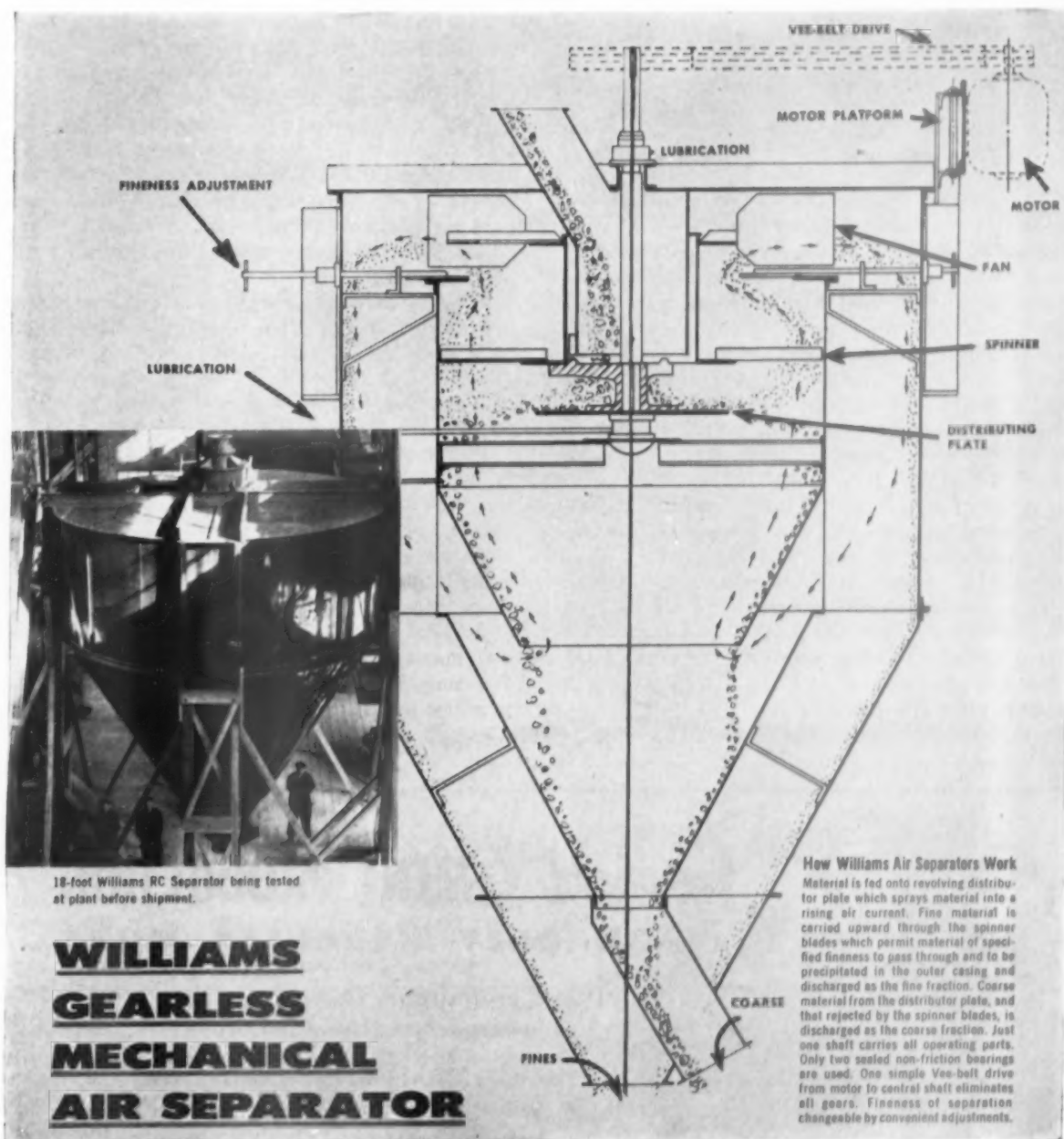
for AIR COMPRESSORS • ROCK DRILLS  
BLAST HOLE DRILLS • HOISTS • CONVEYORS  
FANS • EQUIPMENT FOR TUNNELS,  
MINES, QUARRIES, OIL FIELDS.

WOW L6308 136

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18-foot Williams RC Separator being tested at plant before shipment.

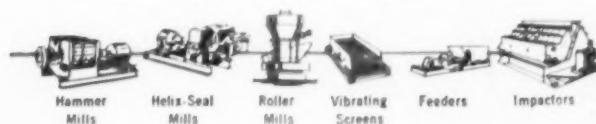
### 20 To 325 Mesh Separations—Trouble-Free Gearless Operation

For removing fines from coarsely ground material or for making separations of fine material (the separations ranging from 20 to 325 mesh), Williams Mechanical Air Separators provide the lowest cost, maximum production equipment yet devised. Separation is by specific gravity and no fine delicate screens are employed. Output is unusually high even for fine separations. Construction is heavy duty throughout with heavy steel plate casing, simple gearless drive

and heavy internal construction. Only two anti-friction bearings are used. They are enclosed in dust-proof and moisture-proof housings. All sizes permit adjustment for wide variation in fineness of separation. Let us send you complete information.

9 Standard sizes. Capacities, 1/4 ton to 75 tons hourly.

**WILLIAMS PATENT CRUSHER & PULVERIZER CO.**  
800 ST. LOUIS AVE. St. Louis 6, Mo.



**WILLIAMS**  
CRUSHERS GRINDERS PULVERIZERS  
Oldest and Largest Manufacturers of Hammer Mills in the World

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## An army of conveyors . . .

continued from page 170

The control tower is at the river bank top, between the lines of stockpiles. Controls for all conveyors, pumps and barge movers are on a panel in view of the operator. Each item is controlled by push-button start and stop switches with a red light indicating when power is on. All are automatic, across-the-line starters with circuit breakers so that if any one meter has trouble or if the operator does not make his start in sequence, the entire plant will be inoperable. A buss diagram is placed behind the panel to change over to individual control of the various units.

One man, in this control tower, operates the entire mechanism of the plant from pit to barges. He also handles the movement of the barges while loading. A ground man hooks up the taglines to the barges and opens and closes the gates from the stockpiles onto the tunnel conveyors. One crane operator handles the crawler mounted dragline. His ground man, or oiler, assists the barge man in plant lubrication.

An intercom system allows the tower man to

talk to the crane operator and, through a loud speaker, to the ground man at the plant.

The tunnels are sloped five percent for drainage. Concrete decking under the stockpile and plant dehydration of material has made it possible for the company to operate 12 months out of the year.

With some 600,000 tons of sand and gravel already through the plant, maintenance on the belt haulage equipment has been exceedingly low. About \$100 has been expended on repairs for all of the conveyors.

Not long after the operation of the Ross plant had started, the firm landed a contract for some 300,000 tons of material for the new Kaiser aluminum plant at Ravenswood, W. Va. Shipments on this order began in April, 1956 and will continue at intervals through April, 1959.

Design of the plant was undertaken in 1955 by S. W. La Lance, consulting engineer of Huntington, W. Va., aided by J. M. Moss and D. L. Money-maker, and by concrete designer C. P. Greene and steel tower designer James E. Moore. All operations are under the supervision of Paris A. Wiley, plant manager.

All belt conveyors and other material-handling equipment were furnished by Barber-Greene Co. Washing, crushing and screening equipment was provided by Allis-Chalmers.

END



### Increased CEMENT PRODUCTION BRADLEY HERCULES MILLS

**\* as a preliminary pulverizer  
for compartment or tube mills.**

**The quickest, most economical way  
to increase your grinding capacity**

For the cement manufacturer with excess kiln capacity . . . here is the answer to INCREASED CAPACITIES at an appreciable SAVING IN HORSEPOWER. The Bradley Hercules Mill, used as a preliminary pulverizer, before compartment mills or tube mills, results in INCREASED PRODUCTION of finished material at a LOWER COST per barrel.

Rugged, dustless construction, maximum accessibility keep maintenance costs at an absolute minimum.

Automatic electrical feed control eliminates manual operation.

For complete information, write for Catalog No. 57



## Bradley PULVERIZER CO.

LONDON    ALLENTOWN, PENNA.    BOSTON

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Fast 2½-yd. Manitowoc Model 3500 shovel loads over 100 20-ton truck loads of limestone a day for well-known Illinois cement producer.

**Plant output depends on your shovel...  
that's why...**

## **Manitowoc pays off in the pit!**

The shovel in your pit is a primary producer with plant production closely geared to its output. That's why you need a real rock shovel — one that can consistently put out the necessary tonnage to keep your plant operating at top efficiency.

Manitowocs fulfill every requirement for rugged quarry service — smooth, steady power flow; fast cycle speed; and the work capacity to load out rock on a round-the-shift schedule.

Simple design throughout channels all useable horsepower directly to the dipper — provides greater line pull for an added margin of power. Disc-type swing and travel clutches assure smooth, precise performance without jerking or grabbing. Under-slung dipper sticks mesh firmly against drive pinions due to upward pressure when digging... Sticks slide through saddle blocks on four adjustable rollers to eliminate wasted power. Extra-heavy construction of the wide-spread crawler base and massive carbody give every Manitowoc a solid foundation for the toughest digging.

These are only a few of the reasons why you see more and more Manitowocs in quarries everywhere. For added facts and figures on the entire profitable line, call your Manitowoc distributor *now*.

### **ADDS POWER BY SAVING POWER**

Only Manitowoc gives you a unique "Slide Pinion" arrangement which effectively reduces the number of gears and pinions needed in the main machinery. Eliminates power loss through unused gear trains — directs full power flow to the operating function.

### **TORQUE CONVERTER REDUCES PEAK LOADS**

Here's smooth power delivery of twice normal torque with maximum engine efficiency at all times. Eliminates peak loads throughout gear train due to quick drum speed changes — extends cable life — reduces machine downtime.

### **STAYS ON THE JOB LONGER**

Manitowoc gives you extra years of big yardage production — lower maintenance cost. Enclosed gears run in oil; there are fewer wearing parts — fewer replacement of parts; balanced design evenly distributes digging stress.

# **Manitowoc**

SHOVELS 1-5½ YD. • CRANES 20-100 TON

**MANITOWOC ENGINEERING CORP.**

Manitowoc, Wisconsin

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ROCK PRODUCTS, August, 1957

195

## Jamaican cement firm

continued from page 178

Finished cement is pumped to the cement silos by a Fluxo pneumatic system. Additional pumping capacity will be installed in the present expansion program.

At the time of the original construction the local power supply in Kingston was 40 cycles. The use of this power would have presented the company with substantial problems in the procurement of motors, transformers and switchgear to work on the nonstandard frequency. Therefore, when the initial plant was built it was not considered feasible for the company to purchase electricity and it built its own generating station.

The Caribbean Cement Co. is a Jamaica-controlled enterprise with international ramifications and a Jamaica-British-American board of directors. Its American agents are Canadian and General Development Co. of New York, whose principals participated in the original organization of the company.

The company's management in Jamaica is headed by Lt. Col. C. L. Melville, managing director. H. F. V. Tame is secretary, and E. W. Humphreys, chief accountant. Other principal operat-

ing personnel are J. Wessel Jensen, works engineer and E. Molkjaer, chief chemist.

The entire expansion program is being supervised by representatives of the company's consulting engineers, F. L. Smidth and Company Limited, who are also supplying the main cement-making machinery. Except for the new main stores building, all concrete construction work is being carried out by Monberg and Thorsen Limited of Denmark. The new main stores building was constructed by Higgs and Hill Limited of Jamaica. Structural steel work has been undertaken by A. and J. Mains and Company Limited of England.

The No. 2 precipitator is a duplicate of the existing dust collector. It was manufactured by Lodge Cottrell Limited of England.

The new diesel engines were supplied by Associated British Oil Engines (Export) Limited, and the alternators by Crompton Parkinson and Company Limited, Chelmsford, England. Installation of the generating sets is being supervised by a representative of Associated British Oil Engines.

In general, the motors and power station switchgear were supplied by Crompton Parkinson and Company Limited, with other switchgear and control equipment supplied by A. Reyrolle and Company Limited, Allen West and Company Limited and Contractor Switchgear Limited, England.

END



# ...YOU

## KNOW IT BEFORE WE DID!

### The Henry Industrial Tractor Shovel TS-40F Answers Your Demands for a Power Loader

This is the machine that you rock, sand and gravel producers discovered for yourselves. We knew it was good. We built this rugged, more powerful loader specifically to harness the strength of the small crawler tractor . . . and its quick acceptance by industrial users proved its value. But we were slow to see how completely it met the needs of rock producers for a tractor-mounted loader that could handle your type of brute wear jobs. You made the discovery. You bought HENRY TS 40F Shovels—wrote in praising them—and ordered more. You're right—it's just the time-saving machine you need!

- Powerful lift cylinders 3 1/2" in diameter
- 1 1/2" thick, solid steel lift arms
- Automatic, parallel-circuit control valves
- Lifting capacity 3,000 lbs.
- Breakaway 5,000 lbs.

Many other exclusive power features. See your Henry dealer or write today for free pictures and details.

COAST TO COAST SALES AND SERVICE



"HYDRAULIC ALL-PURPOSE EARTH MOVERS"  
**MANUFACTURING COMPANY, INC.**  
1700 NORTH CLAY ST. TOPEKA, KANSAS

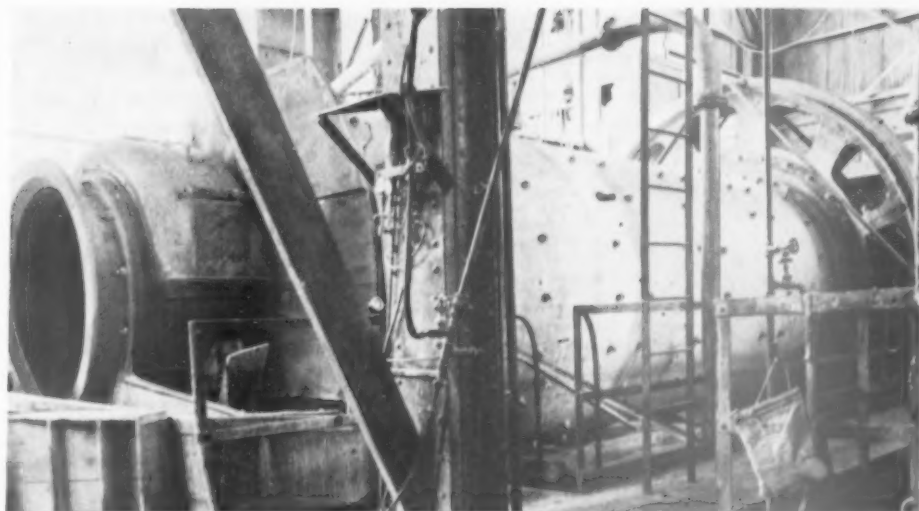
"You can do it  
BETTER with a HENRY!"





# see what Marcy can do for YOU!

## Grinding Cement



One of the most progressive cement companies, the Calaveras Cement Company, has for twelve years benefited from the use of Marcy grinding equipment. During its continuing growth and improvement of operations additional Marcys have been selected...to date nine Marcy Ball Mills have been installed.

Pioneering in cement grinding work has left Calaveras open minded and, as a result, recently a 9' x 12' Marcy Open End Rod Mill was installed for clinker grinding work. This deviation from common practice has paid dividends. Not only is pit run clinker economically reduced to about 2% + 8 mesh, 100% - 4 mesh in open circuit, but also the finer, finish grinding circuit has been increased in capacity as a result of better, finer feed preparation through use of the Marcy Rod Mill. No longer is tramp oversize a problem. The ultimate potential of this 9' x 12' Marcy is still not determined...to date better than 500 bbls/hour are being ground.

*Such advantages as the above, coupled with the years of manufacturing, pioneering and development experience offered by Marcy are yours*

**...why not get the full story on grinding?**



Calaveras Cement Company Plant

**NO EXTRA CHARGE FOR**



**EXPERIENCE**

**THE MINE AND SMELTER SUPPLY CO.**

DENVER

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SALT LAKE CITY

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SALES AGENTS AND LICENSED MANUFACTURERS THROUGHOUT THE WORLD

## LOW COST POWER For Fast "Secondary Breakage"



### FREDERICK CAST SEMI-STEEL DROP BALLS

Tough, rugged Frederick Drop Balls give you crushing power where you want it, when you want it . . . cut down expensive drilling or blasting . . . give long, economical service with little or no maintenance. Exclusive "Pear shaped" design withstands greater impact—drops straighter. "E-Z Swing" recessed steel eye gives cable protection plus free swinging action. Use Frederick Cable Weights (135 & 250 lbs.) and Frederick Swivels on all size balls for true, safe cable performance. Nickel alloy standard on all 4000 lbs. or over—or special alloys furnished on request. Balls can be furnished with replaceable pins. Special release hooks for free dropping also available.

Write us today for prices and illustrated literature. Order Balls direct or see your nearest Equipment Dealer.



Wide Range of Sizes and Weights:	
Pear shape (lbs.)	1500 2000 3300 4000 5200 6500 8000
Ball shape (lbs.)	500 1000 2000 5200
Spherical shape (lbs.) (for magnet use)	470 930 1650 2400 3000 3700 5400

### FREDERICK IRON & STEEL, INC.

FREDERICK Established 1890 MARYLAND

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CENTRIFUGAL PUMPS • MUNICIPAL AND GRAY IRON CASTINGS  
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### This "No Contact" feature

REDUCES  
UP KEEP  
\$ \$ \$  
SAVES YOU  
MONEY



In a Hayward, there's no contact between the closing mechanism and the material handled. This means much less wear, reduced up-keep, big savings in bucket maintenance. THE HAYWARD COMPANY, 50 Church St., New York 7, N.Y.

### HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES  
famous for performance since 1888

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WRITE FOR  
CATALOG  
56

DURABLE  
ECONOMICAL  
WOVENWIRE  
SCREENS  
KNOWN AROUND  
THE WORLD

TWIN CITY IRON & WIRE CO.

33 W. WATER STREET • ST. PAUL 1, MINNESOTA

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## YOU builds employee relations

continued from page 181

why they like you as a supervisor . . . your word magic will be working for you.

"As you know . . ." These three little words can be real word magic for a supervisor who will put them to work. Every time you use the expression, "as you know," you give your employee a subtle compliment. You indicate through your word magic that you recognize your employee has plenty of know-how about his job. Yet, you have an opportunity to repeat the instructions.

Regardless of whether or not your employees know what you are telling them, they will agree. Vanity enters the picture to help this word magic work for you in building better employee relations in your department. Your employees go on record as "knowing" because you have used the "as you know" preface to your instructions.

When you use enough "as you knows" in dealing with your employees, you will find that they readily accept your idea or instructions. Before long the ideas you have planted with this "as you know" psychology, become your employee's ideas. Word magic will have done an employee relations job.

There are two thoughts to keep in mind in applying this word magic in dealing with workers in your department: use the phrase "as you know" to preface the point you want to make—not after you have made a complete explanation. Do not use this word magic on points that the employee could not possibly know—keep it for things he might or should know.

One problem you probably have in your plant is to find out exactly what your employee's interests and desires are. When you use the phrase, "What is your opinion?" you are able to draw out your employee's real problem or interests. It will pinpoint the problem your employee has, and then you can quickly work out a solution and give him what he really wants.

Asking an employee for his opinion is a subtle compliment. It gets away from the thought that the supervisor is trying to put something over on him. He believes that you are a friend of his because you have asked him for his opinion.

"What is your opinion?" is word magic. But misused, it can be a dangerous device to use in dealing with employees under your supervision. You should be sure that the point it is used on is not one that will get the conference off the track.

Another pitfall to avoid is the constant repetition of the same phrase—"What is your opinion?" It is good word magic, but it becomes better if the

Please turn to page 200

# Limestone...



for CEMENT



for CHEMICAL LIME



for ALKALIES



for REFRACTORIES



for GLASS



for SOIL CONDITIONING



for WATER PURIFICATION



for ROCK WOOL



for CALCIUM CARBIDE

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IRON OXIDE ( $\text{Fe}_2\text{O}_3$ )	0.72	0.43	0.49
ALUMINA ( $\text{Al}_2\text{O}_3$ )	21	20	19
LIME ( $\text{CaO}$ )	55.00	54.90	55.40
MAGNESIA ( $\text{MgO}$ )	65	62	51
SULPHUR (S)	0.12	0.11	0.15
PHOSPHORUS (P)	0.06	0.06	0.09
IGNITION LOSS	43.20	43.50	43.20
CALCIUM CARBONATE (Calculated)	97.90	97.72	98.51
MAGNESIUM CARBONATE (Calculated)	1.36	1.30	1.07

Analyses by  
Pittsburgh Testing Laboratories  
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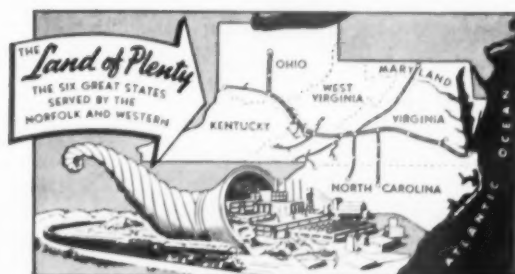
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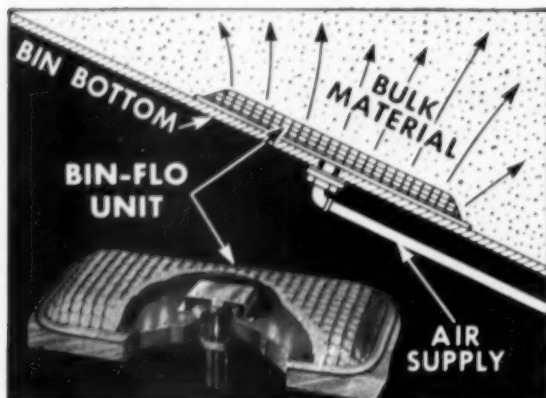
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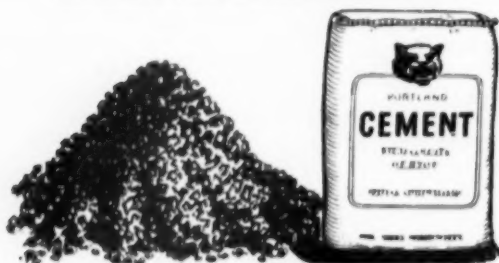
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## **YOU builds employe relations**

*continued from page 198*

same idea is expressed more frequently in other words. For instance, you might ask, "What do you think of this?" or "How do you suppose we should do this?" or "What is your thought on this?" or "Do you have any good ideas on this?"

Another form of word magic employed by supervisors to smoke out the employee's real complaint or gripe is "Yes, and in addition . . . ?" It shows agreement with the employee's ideas, but it asks a question which will tend to bring the real reason for the complaint out into the open. It will be strong word magic for you if you get the right inflection into your voice as you add, "Yes, and in addition . . ."

To make this word magic work best for you, you will need to develop the attitude that the first complaint an employee raises is not necessarily his real complaint. Thus, you will be sincere in wanting him to continue . . . to give you the "in addition" part of his complaint. It will require a little practice to master this word magic, but it will pay you handsome dividends for years once you have it down pat.

One of a plant supervisor's main tasks is to build a spirit of cooperation in his department. Top management wants it. Employees like their work better when there is plenty of friendly cooperation in their department. And, supervisors find their work easier when they build this spirit of cooperation.

"WE" is the word magic to use to develop this spirit. It puts the employees into the act . . . makes them feel like they belong to the profit team. They will take pride in accomplishment. They will feel they will get a share of the credit for all departmental accomplishments.

One pitfall of the use of "we" in employee relations is that it should be used to include the employees . . . not to include just other supervisors or top management. When "we" is used in place of "I" it defeats its purpose as word magic for building better employee relations.

You must bear in mind that all these magic words are only tools that you can use to build better employee relations.

When you get a good YOU-ability score in your discussions and have built a spirit of good cooperation by the effective use of "we" in employee relations—hold your hat, you're going places! Be very certain that you can handle this word magic before you start.

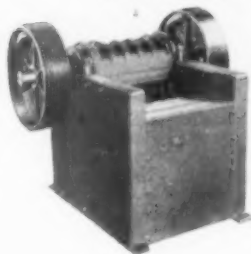
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## JAW CRUSHERS

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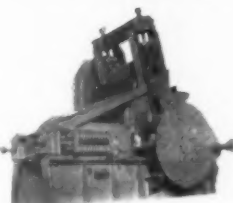
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PIONEER design makes 100% of roll shell available as crushing surface. Shells are easily replaced without removing bearings from shaft. Driven by star gears, completely enclosed and running in oil. Available in 2416, 3018, 3024, 4022, and 5424 sizes.



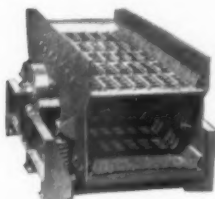
## TRIPLE ROLL CRUSHER

Add a third roll and you have a triple roll crusher. This makes it possible to increase stage of reduction to as much as 6 1/2". The Triple Roll Crusher is manufactured only by PIONEER. Available in 3018, 4022, 5424 sizes.



## IMPACT BREAKER

The PIONEER 3648 Cuber is a multi-stage, regulated-flow impact breaker suitable for either primary or secondary crushing of relatively non-abrasive stone. Full gradation control. Capacity up to 150 tph of minus 1"; up to 350 tph of minus 3".



## MESABI SCREEN

This heavy-duty vibrating screen withstands heaviest loads. Frame is 18" car channel with 8" wide flange beams. Pans are 3/4" or 1/2" thick. Four bearing, heavy duty shaft. Seven sizes from 4' x 10' to 6' x 14'.

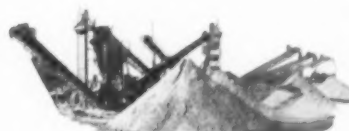


## VIBRATING SCREENS

PIONEER's full-circle throw gives same positive down-hill vibration at each end as in middle, thus every square inch works for you. Balanced end-for-end and top-for-bottom, to effectively confine vibration to pan. 2 and 3 deck screens in 11 sizes.

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Available in 18", 24", 30", 36", and 42" widths. Easy-to-erect pre-engineered conveyors range in length from 30' to 120' in 5' increments. Job-engineered conveyors for horizontal, extra long, or other special installations are available in any length from 12' up.



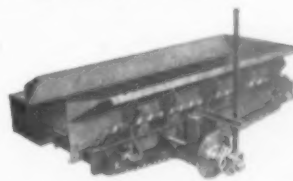
## PORTABLE CONVEYORS

On hydraulic cradle truck for easy portability and one-man operation. A 70' conveyor is easily raised to operating position in 9 minutes, lowered in 1 minute. Available in 18", 24", 30", 36" widths; in 40', 50', 60', 70' lengths.



## APRON FEEDERS

Heavy-duty PIONEER Apron Feeders have 1/2" thick, overlapping, forged steel pans carried on heavy chains supported on wide heavy duty rollers. Available with or without straight or flared sideboards. Widths 30", 36", 42", 48". Lengths 6', 8', 10', 12', 14' and larger.



## PORTABLE APRON FEEDERS

Mounted on pneumatic-tired chassis. Used in place of conveyor for feeding heavy, sharp, abrasive rock to portable primary crushing plant. Easily detached for quick job-to-job moves. Available in two sizes: 36" x 30' and 42" x 30'.



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Officers of the association, including (l to r) Robert S. Boynton, general manager; M. A. Rikard, president; and Paul Sunderland, treasurer.



Speakers at the opening session included (l to r) Kenneth A. Gutschick, NLA; J. Lewis Powell, U. S. Dept. of Defense; Robert S. Boynton, NLA general manager; and Conard M. Kelley, NLA.

- Lime stabilization market looms large
- Research points toward new markets
- "Calcimatic" kiln announced — new concept in lime burning
- Output quadrupled in vertical lime kiln
- Safety experience improved

## Lime industry faces brighter future

**N**EW DEVELOPMENTS in the lime industry are leading the way to a better outlook for lime in the future. This attitude prevailed during the 55th Annual Convention of the National Lime Association, held June 6-8 at Colorado Springs, Colo. Despite the fact that some former lime markets are "sick," producers are facing up to that fact instead of ignoring it. Technical and market research, plus lime sales, are being accented vigorously to improve those markets and to find new ones. Success in some of the fields already has been noted.

NLA president M. A. Rikard, Southern Cement Co., sketched what he termed a "year of progress" for the association during this past year. Factors that have contributed to the maintenance of a strong and healthy association include, according to Mr. Rikard, the institution of the "Limeograph" by the Washington staff, continued activity in research, improvement in technical services supplied by NLA, accelerated work on soil stabilization and more activity in advertising and promotion.

General manager of the association, Robert S. Boynton, reported that he believed definite progress is being made through accelerated association

programs. "It is difficult to evaluate the tangible results of publicity and research work in terms of immediate worth," he said. The lime stabilization promotional program, which has been stepped up since its beginning only 1½ years ago, is one example of tangible progress, since results there can be measured. Lime consumption for this purpose has grown to nearly 130,000 tons annually. "We've just scratched the surface in this market," said Boynton.

There are two main jobs that have to be done to get desired progress in the industry, according to Mr. Boynton: (1) stem the tide of a trend toward the use of less lime mortar, and (2) utilize research to find new markets. The Technical committee is now studying all possibilities for research that point toward the creation of new markets for lime.

These reviews of progress led to the introduction of Conard M. Kelley, NLA highway engineer, who reported on the work he is doing for the association in lime stabilization. "I haven't lost enthusiasm for lime in my travels," he stated. "The service behaviour of lime in the program has strengthened that feeling." He stated that lime stabilization in subgrade work on high-

ways is the one big outlook for lime use in the future.

The topic of lime uses consumed one complete session at the annual meeting. Specialists in lime stabilization, uranium milling and steel and water treatment discussed history and development of lime use in those fields. Those discussed did not cover all uses of lime but did point out that there are opportunities for using more lime in those fields.

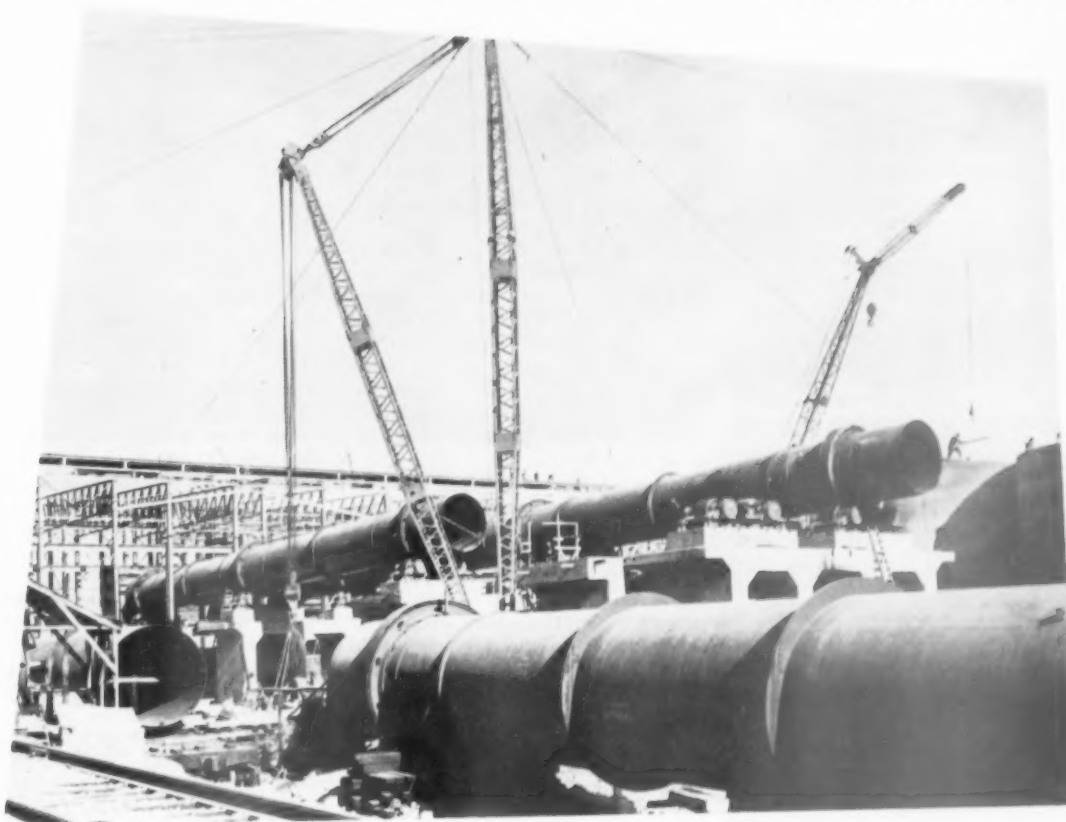
There are definite benefits of lime stabilization in Texas, according to Chester McDowell, senior soils engineer for that state's highway department. His state is the largest single user of lime for stabilization of highways, and it has been claimed that its use has saved time by expediting construction in Texas.

Progress in lime stabilization of roads in Texas has been built around pavement design. That progress has been speeded by developing laboratory techniques, then checking their usefulness in the field. The upturn in lime use has been fast in the state. At present, consumption for this work is about 50,000 tons per year, but Mr. McDowell believes that figure will be doubled in a short period.

A relatively new use for lime is its

(Continued on page 204)

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## NLA MEETING

(Continued from page 202)



Most newly elected members of the board of directors attended a special luncheon after the opening session.

### NLA OFFICERS AND BOARD OF DIRECTORS 1957-1958

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application to the uranium milling industry. Description of such use was given by C. J. Lewis, manager, Chemical Division, Colorado School of Mines Research Foundation, Inc. Mr. Lewis took the group on a graphic tour of a uranium mill through the use of slides, explaining each step and the uses of lime in the uranium refining process.

**Lime fits into the picture** at three different points. First, lime is used in water treatment processes for yielding boiler feed water, clarified water for the makeup of reagent solutions and potable water. The second application for lime is in neutralizing acid wastes before they are discharged to public domain. According to Mr. Lewis, it requires about 40 lb. of calcium oxide per ton of ore milled to do that job. On the basis of 10 plants now operating and using the acid leaching process, it takes about 108 tons of calcium oxide equivalent per day. Adding estimates for mills under construction, being planned or developed, Mr. Lewis suggested that 900 tons of calcium oxide will be needed daily to neutralize acid tailings; barren solutions.

The third place in the process where lime is used is at the precipitation stage of uranium concentrate cake. Lime can be used in a two-stage precipitation operation in this process. If such system continues to gain in popularity, daily quicklime requirements for this purpose would be about eight tons in the U. S. and 20 tons in Canada. Mr. Lewis suggested the possibility that lime could be used in the control and disposal of radioactive wastes.

**Use of lime and limestone** by the steel industry was discussed fully by Mr. F. A. McCoy, works metallurgist, Sheffield Steel Division of Armco Steel Corp. Mr. McCoy pointed out the use of limestone and burnt lime by the

steel industry involves several uses other than flux. But, when added together, these other uses are insignificant in quantity when compared to the tonnage used for fluxing purposes.

On the basis of an annual ingot production of 120 million tons, about 40 million tons of limestone and lime would be used. Mr. McCoy divided the latter figure into: blast furnace stone, 32 million tons; open hearth stone, 7 million tons; and open hearth and electric furnace burnt lime, 1 million tons.

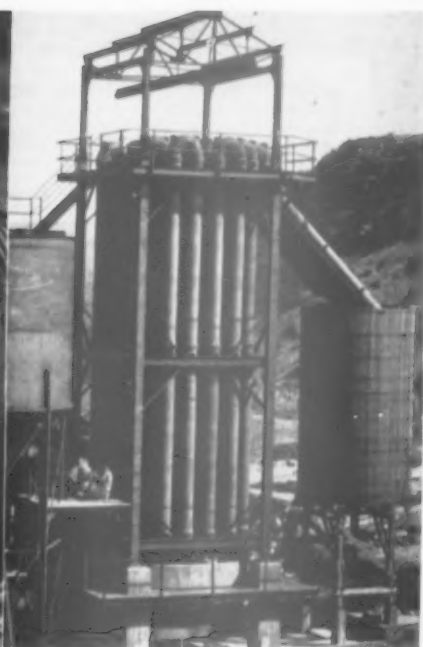
Each method of making steel was discussed, including a newer method called the "Basic Oxygen Process." Here, burnt lime is added through inclined chutes during the refining period and sulfur is removed as well as or better than in the open hearth. Some reduction in lime consumed per ton of steel made by this method might be expected, but not much.

A final paper on lime use covered some lesser known uses of lime in water treatment. More than a dozen uses were named and explained by Merrill L. Riehl, superintendent of Water Purification, The Mahoning Valley Sanitary District, Ohio. "To most people the use of lime in water treatment denotes one thing: softening," he said; "and to a number of others, lime is the means of alkalinity or pH adjustment for better coagulation and/or corrosion control." But there are many other uses for lime in water treatment. "Probably no other chemical can perform as many different functions as does lime," he stated.

**Technical progress in kiln operation** was given one full session at the meeting. A significant development affecting lime manufacture was description of a new high capacity vertical lime kiln that yielded up to 480 tons per day from 3/4 x 2-in. limestone. An-

(Continued on page 206)





Above and left: 36" x 20" Kue-Ken at mercury mine

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Table is based on crushing average hard, dry quartz or similar rock weighing at least 100 lbs. per cubic foot when crushed.

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30" x 12"	32	35	38	42	55	70	76	85	110	20 to 30	
36" x 10"	38	47	57	67	80	91	105			25 to 40	
36" x 20"				70	82	90	115	135	160	30 to 50	
42" x 25"				90	120	150	165	180	215	250	40 to 60



Above: Cover removed showing clean, filtered oil pouring down over shaft, bearing and toggles. With this positive lubrication, machined parts maintain their original micrometer tolerances for the life of the crusher. Only periodic oil changes are required.

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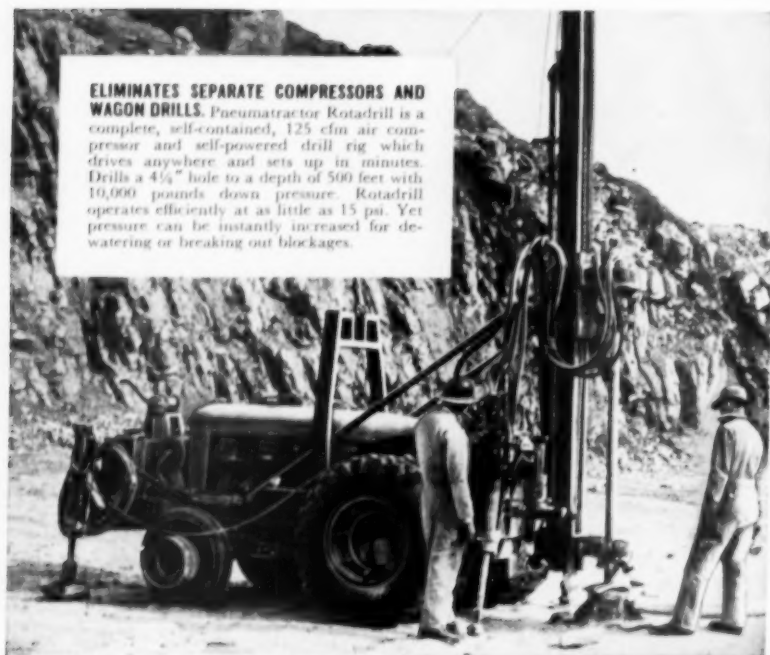
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ROCK PRODUCTS, August, 1957

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It actually happened. In rock-ledge Pennsylvania soil, a Schramm Rotadrill mounted on Pneumatractor made hole in six hours that took 24 with a conventional rig. This is a matter of record—and so is the fact that, in the hard limestone areas of Michigan, Rotadrill increased penetration rates 55% to 66%.

Rotary drilling with compressed air is one reason for Rotadrill's cost-cutting speed. Because compressed air keeps the hole clean, the bit works constantly on new rock, instead of regrounding chips. Fast set-up is another time-saver; simply raise the mast, level the rig and attach bit—all in a matter of minutes. Finally, Rotadrill makes it easy for one man to add or remove drill pipe without trouble or delay.

Pneumatractor Rotadrill is a complete drilling unit. There's no expensive, cumbersome superstructure to erect and dismantle. Also, Pneumatractor Rotadrill is self-propelled—travels anywhere under its own power and doubles as a tractor and air compressor when not drilling. Compactness and simplicity of the rig keep maintenance costs at rock bottom.

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## NLA MEETING

(Continued from page 204)

other brand new development was announced: the "Calcimatic" or circular-hearth calciner. This unit was first brought out from under wraps at this meeting.

Of much interest was the discussion of the high-capacity vertical lime kiln, given by H. Leuenberger of Electro Metallurgical Company. He explained how a kiln designed for 100 tons per day was redesigned to give a nearly four-fold increase in output with success. Three such kilns were installed at his company's Ash-tabula Plant. They operated with induced draft, using producer gas as fuel. Dimensions were 11 x 11 ft. internal cross section in the calcining zone, with 50-ft. shell height. Feed was 3½ x 2-in. Michigan limestone, rescreened at ¾ in.

According to Dr. Leuenberger, the 100-tpd. kiln was redesigned to produce 480 tpd. by increasing the draft and by carefully distributing the fluid fuel (by-product gas) through water-cooled steel ducts. Mechanization and automatic controls reduced labor requirements per ton of lime to the level of a comparable rotary kiln installation. The high-capacity kiln represents a minimum capital investment to meet a given lime production rate.

The first step in redesign was that of increasing the induced draft, to permit high operating rates. Induced draft pressure rose progressively from 6-in. to 28-in. water gauge, and lime output rose from one to four tons per day per square foot of kiln cross section. It was noted that fan horsepower required at the 28-in. water-gauge level was 385.

The second major change was the application of water-cooled steel ducts to achieve accurate heat distribution. These ducts are hollow, water-cooled beams traversing the kiln in a free span. By partitioning, each was divided into four equal ducts. A number of ports into the kiln was provided for each of these. Cold air could be introduced into the kiln from these outlets. Fuel pipelines were installed in the ducts, to discharge fuel at desired rates into the center of the ports.

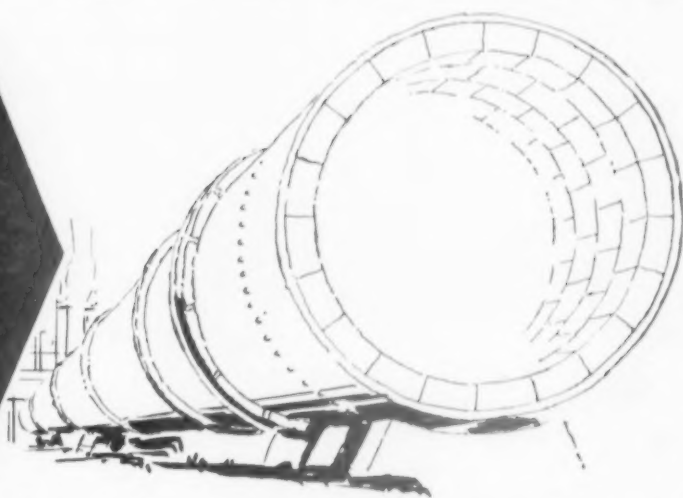
Burner ducts were installed in the kiln at two levels, to permit control of flame temperatures.

In operation, core was down to a fraction of a percent on some tests, but averaged about three percent for production rates that varied from 327 to 480 tons per day. Temperature of lime at discharge, at top production rate, was cool enough to be handled.

(Continued on page 208)

# Higher Bulk Density . . . Lower Porosity

## the BIG PLUS in



### WALSH High Alumina Refractories

Quality control, spearheaded by better research and ceramic engineering, has been largely responsible for the plus values in Walsh High Alumina Refractories for the cement and lime industries.

Their composition of carefully graded and selected minerals, noted for non-shrinking qualities, is further enhanced by the dry press method of manufacture, imparting uniformity of size and shape.

Lower porosity and higher bulk density characteristics account for their increased tensile strength, consequent greater resistance to abrasion, and excellent non-spalling qualities—features that combine to insure better all 'round performance throughout a longer service life at elevated temperatures. Isn't this the kind of performance you've been looking for in your plant? Get the whole money-saving story from your Walsh representative, or write us for details.

#### WALSH HI LUMITE

60 & 70, Dry Press Process Firebrick (60% & 70% alumina content, respectively).

Uses: High temperature liners for rotary cement kilns and lime kiln linings.

Properties: Non-shrinking; low porosity; higher tensile strength that reduces refractory loss incurred when coating peels off.



#### WALSH WARCO XXD

High Duty Firebrick, Dry Press Process.

Uses: Cold and hot zone rotary kiln liners and lime kiln linings.

Properties: Greater resistance to abrasive action; higher bulk density; mechanically stronger; clean cut corners and edges . . . true to dimension.



#### WALSH MULLITEX D

Super Duty Grade Firebrick, Dry Press Process.

Uses: Intermediate zone liners.

Properties: Higher bulk density and lower porosity in super duty grade . . . resistance to thermal shock; greater resistance to abrasion.



*Specialists in refractories of high bulk density and low porosity*

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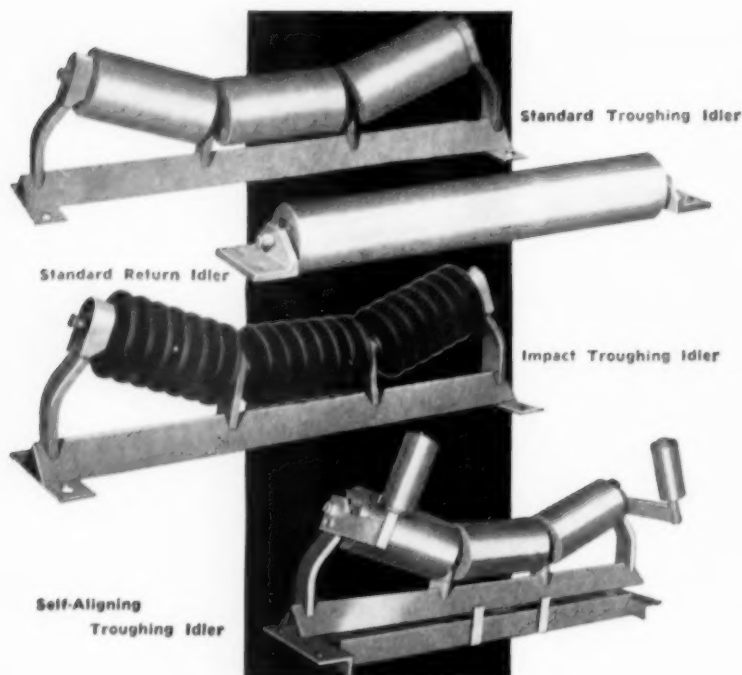
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ROCK PRODUCTS, August, 1957

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207



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### INCREASE PROFITS BY HANDLING GREATER LOADS AT LOWEST COSTS...

The advanced engineering ideas incorporated in MARCO conveyor idlers will increase your production and lower your material handling costs.

For example, MARCO idlers have greater load capacity because they are designed with precision ground ball bearings, designed specifically for conveyor idlers. At 300 revolutions per minute, they will carry loads up to 860 lbs. per bearing. These anti-friction bearings give you added years of idler service life and lower power requirements.

**Less maintenance:** Pre-lubricated, effectively sealed bearings eliminate field lubrication. Self-shedding base keeps material build-up at a minimum. End and center brackets are  $\frac{1}{2}$ " thick steel, die formed, to eliminate breakage.

Why settle for anything less than the proven economy and efficiency offered by MARCO idlers? Units fit any conveyor frame and are available in many types and sizes. Ask for bulletin ID-2.

#### MARCO — One source for all your Conveyor Needs

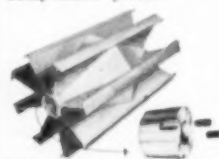
Whether you need a complete conveyor, or any conveyor accessory, there is a MARCO product to meet your exact requirements. By relying on MARCO—you save time, trouble and get more for your dollar.

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#### Solid Steel Pulleys (all-steel, heavy-duty)



All MARCO pulleys offer the outstanding advantages of machined faces and Taper-Lock bushings—at a competitive price.



#### Self-Cleaning (wing-type) Conveyor Pulleys (Steel fabricated, jig welded)

Pulley pays for itself many times in longer belt life by discharging "mis-located" particles before belt can be damaged.



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#### engineered MARCO products:

Tubular Frame Belt Conveyors—Conveyor Idlers—Solid Steel and Self-Cleaning Steel Pulleys—Bucket Elevators—Control Gates—Feeders—Bins.

## NLA MEETING

(Continued from page 206)

Discharge gas temperature ranged from 480 to 520 degrees.

A new concept in calcining lime was described and explained by Ian Smellie, industrial consultant, The Calcimatic Company of Toronto, Ont. He credited H. L. Hall, a Canadian industrialist, for origin of the new idea. According to Mr. Hall, the lime industry needed a process that would continuously transport a ribbon of stone through various carefully controlled conditions of temperature and time. These conditions should be set up with the use of automatic instrumentation, so that they will be self-controlled and constant to provide a constant product. The new "Calcimatic" is the result of research designed to satisfy the professed need for a continuous system.

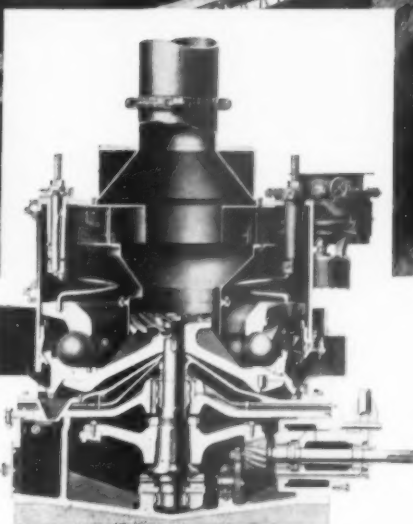
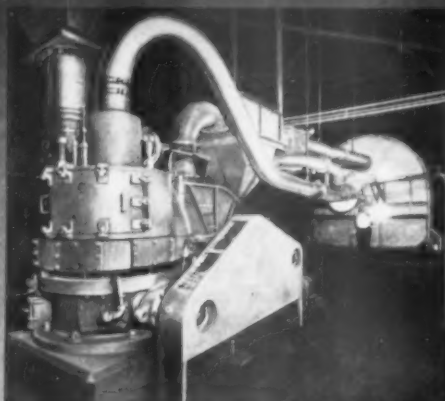
The process employs a circular hearth on which a ribbon of stone rides through various phases of the calcining process. Several combustion chambers are arranged over the circular hearth, and they are separated from each other by baffles that reach down from the top of the chamber nearly to the stone bed. Each chamber, or zone, is separately controlled to hold pre-set temperatures.

According to Mr. Smellie, the equipment is designed for good control of stone bed thickness, time of travel and temperature anywhere along the stone path. Products of combustion from the zones flow in the direction opposite to stone flow, giving advantages in efficiency, according to Mr. Smellie. These additional advantages of the unit were discussed: product quality, flexibility, efficiency, controllability, dust-free quality, capacities from 10 to 500 tpd. and good maintenance.

The report on safety and research was given by Kenneth A. Gutschick, manager of Technical Services for NLA and a former associate editor of ROCK PRODUCTS. Data now show that 18 plants experienced no lost-time accidents in 1956—a new record for the industry. Another new record also was established: lowest frequency rate in the history of the industry. It showed less than 14 accidents per million man hours. Mr. Gutschick closed his safety discussion with an appeal for greater participation in the NLA safety contest. In 1956, only 40 plants were entered, or less than  $\frac{1}{3}$  of the country's commercial lime plants. Safety contest winners in the 1956

(Continued on page 210)





## IN THE LONG RUN ...B&W Type EL Pulverizers

Wherever these "extended engagement" pulverizers are used for direct-firing of rotary kilns they have established long and impressive performance records.

### BECAUSE:

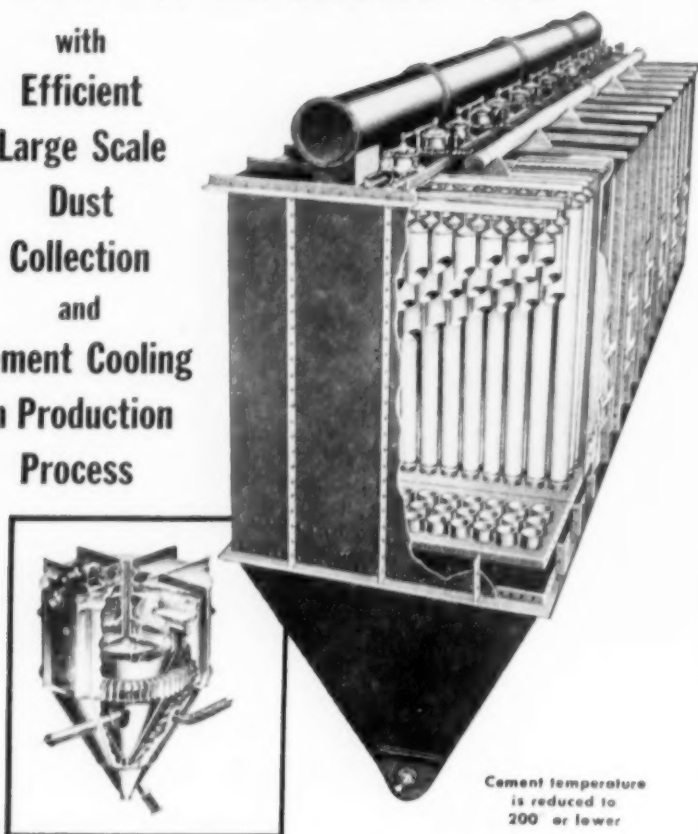
1. Grinding zone has no bearings or parts to be lubricated.
2. No internal adjustments are required.
3. Grinding elements are made of wear-resistant, long-life metals, with grinding balls held to close spherical tolerances.
4. Fully-enclosed reduction gear drive, with anti-friction bearings, and integral pump for automatic pressure lubrication.
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These qualities plus many years of manufacture and application combine to give you constant, high-level service for modern kiln operation. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.



# Norblo serves the Cement Industries well—

with  
Efficient  
Large Scale  
Dust  
Collection  
and  
Cement Cooling  
in Production  
Process



Cement temperature  
is reduced to  
200 or lower

Norblo's Cement Air Cooler and Dust Collection System (patented) combines two separate functions necessary for modern cement manufacture in one unit. The system cools both fines and tailings—eliminates higher temperatures that damage the finished product—and keeps temperatures inside the mill at more comfortable levels. Norblo Automatic Bag Type Dust Arresters with cyclic bag cleaning provide maximum efficiency of collection with low maintenance and operating cost. Remarkable results are achieved today in hundreds of American and foreign mills.

Norblo's wide experience in the cement field is quickly made profitable to you. A survey of your operations, at your invitation, brings sound recommendations for application of dust control and beneficial cooling in cement manufacture.

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# Norblo

ENGINEERED DUST COLLECTION SYSTEMS  
FOR ALL INDUSTRIES

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## NLA MEETING

(Continued from page 208)

contest are indicated in an accompanying table.

Research activities of NLA also were covered by Mr. Gutschick. A complete report of such activities has been mailed to membership. Generally, most research at present is of a practical nature. But it is expected that funds will be made available soon for much-needed basic research. The Technical Committee is presently studying the matter.

### WINNERS, 1956 NLA SAFETY CONTEST

Class	Plant	Company	Man Hours
A1	Plymouth Meeting	G. & W. H. Carson, Inc.	355,680
A2	Lee	Lee Lime Corp.	90,500
B	Bell	Warner Co., Bellefonte Div.	552,357
C	Hannibal	Marblehead Lime Co.	106,632

#### Note:

A1—Quarry with calcining plant working 100,000 or more man hours.

A2—Quarry with calcining plant working less than 100,000 man hours.

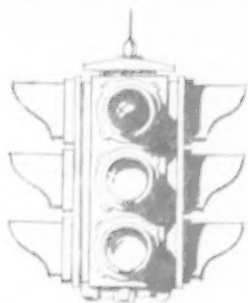
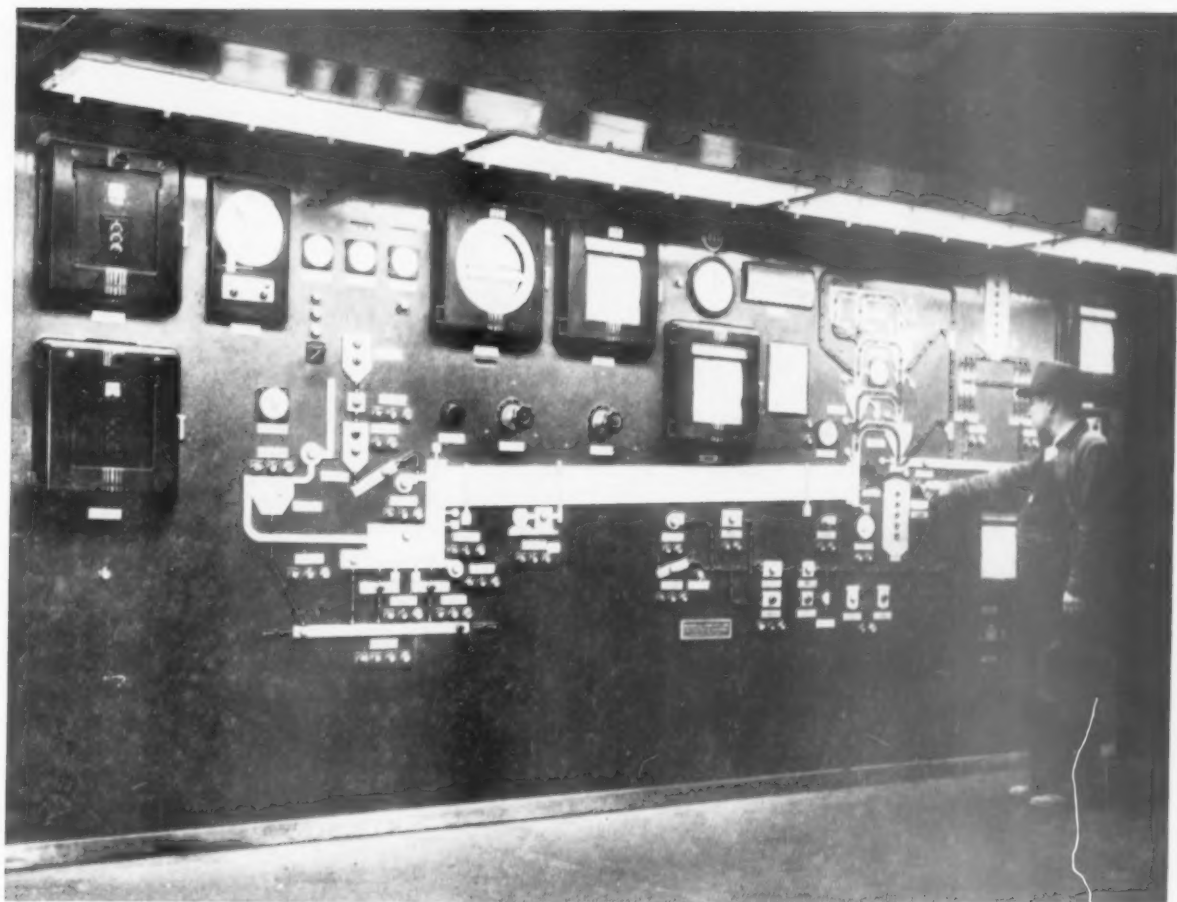
B—Underground mine with calcining plant.

C—Calcining plant only.

An unusual and most entertaining highlight of the business sessions was a paper on "Collapse of Time" by J. Lewis Powell, Office of the Assistant Secretary of Defense (Supply and Logistics). In his talk, Mr. Powell did an excellent job of showing the need for mobilizing industry now, to prepare for the next world war, when and if it comes. He used a "Curve of Technology," or graph, to indicate progress in several categories for the past 3,000 years. Specifically, he used speed of man, explosives and food curves. For example, he stated that speed of man was limited to 30-34 miles per hour for 1,500 years before Nero's time until the "Oat Barrier" was broken about 1830. In the short 10-year period since the end of War II, speed increased at the fantastic rate of from about 400 to 1,600 miles per hour.

The point he made — forcefully made—is that progress has stampeded in the past 10-year period, compared with that made in 30 centuries before. Such rapid developments in technology in such a short period of time has erased the security that formerly was stored in stockpiles. Today's modern weapons have a much shorter life span, and therein lies an important reason why we should promote maximum industrial readiness to produce

(Continued on page 212)



## New pictorial systems help Huron Portland **STOP TROUBLE BEFORE IT STARTS**

**At Alpena, high in northern Michigan,** operators use these pictorial instrument panels to watch over the daily operation of Huron Portland Cement's new kilns . . . and any malfunction is quickly spotted and action taken before upsets become serious.

With these systems, even less experienced burners can follow the flow of raw material from mill to clinker. Every operation is clearly charted by Speedomax® instruments or indicated by colored signal lights . . . each in its proper position on the anodized process diagram.

These systems, constructed in L&N's new plant at North Wales, Pa., are the concrete results of close design cooperation between Huron Portland, McDowell Company and Leeds & Northrup.

When next you are planning rotary kiln plant expansion or modernization, let us cooperate with you to supply the instrument and control systems that fit your requirements. A call or letter to the L&N office nearest you will help us to serve you better. Leeds & Northrup Co., 4975 Stenton Ave., Phila. 44, Pa.

*McDowell Co., Inc., Engineers*

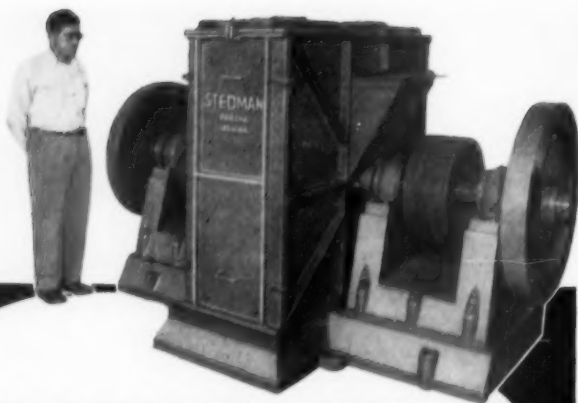
**LEEDS**

Instruments



**NORTHROP**

Automatic Controls • Furnaces



**ARE YOUR STONE AND GRAVEL PRODUCTS  
CUBICAL IN SHAPE?**

**ARE THEY FREE OF SOFT STONE AND CLAY?**

**WILL THEY MEET SPECIFICATIONS  
AND PASS ABRASION TESTS?**

**DO YOU NEED MORE OF THE FINER SIZES  
IN YOUR SAND PRODUCTS?**

**CAN YOU MEET TODAY'S SPECIFICATIONS  
ON AG LIME?**

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## CRUSHING EQUIPMENT

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Write for complete details on the STEDMAN PRINCIPLE  
OF IMPACT CRUSHING to meet today's requirements.

MORE THAN A CENTURY OF KNOW-HOW

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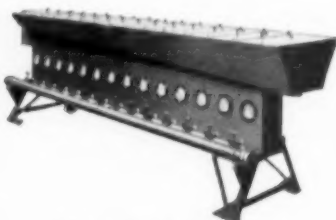
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The CONCENCO CPC Classifier, operating by hydraulic water only and with no moving parts, classifies up to 10 or more sizes accurately and economically . . . as many sizes as there are cells in the Classifier. Classification is continuous and simultaneous. Action is visible so that each cell's water adjustment is easily regulated for sharp sizing. Maintenance cost is exceptionally low. Send for full information.



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Incorporated 1906

**The DEISTER CONCENTRATOR COMPANY, INC.**

913 Glasgow Avenue, Fort Wayne, Indiana

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### NLA MEETING

*(Continued from page 210)*

later models. "Military preparedness is inextricably geared to industrial readiness," he said. "Our nation strength rests on the sound foundation of an alert, capably military-industry team."

All officers of the association were re-elected to serve the 1957-1958 term. Twenty-seven directors, representing 15 districts, were elected to serve the next term. Appropriate resolutions were read in memory of 10 members who passed away during the year, which was the worst year in that respect yet experienced by NLA.

C. E. Baxter, Ash Grove Lime & Portland Cement Company, announced temporary plans for the next Operators' Meeting of NLA, which will be held October 17-19 at the Commodore Perry Hotel, Austin, Texas. At Colorado Springs, the usual golf tournament and special entertainment was enjoyed by the largest attendance ever recorded at an annual NLA meeting.

**END**

### Change over to new process at phosphate fertilizer co.

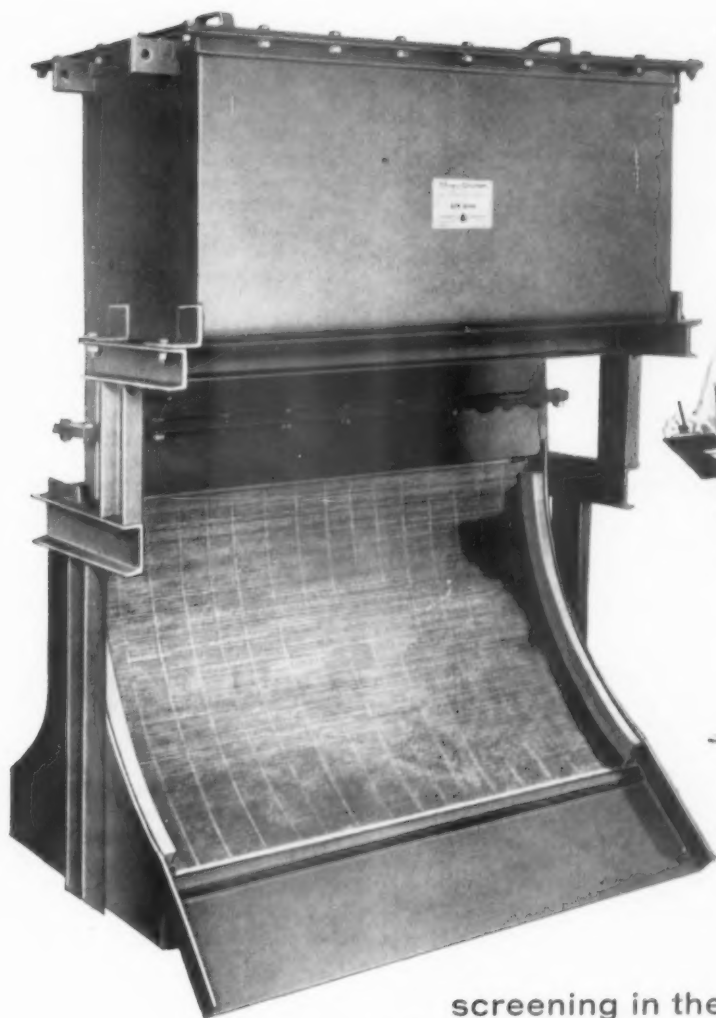
ILLINOIS FARM SUPPLY CO., East St. Louis, Ill., closed its plant early in July to change over to a new process that combines calcium metaphosphate into a free-flowing granular-type mixed fertilizer. James Seymour, one of its chemists, developed the process, which boosts the content of water-soluble phosphates in fertilizer. Patents on the process have been applied for.

Currently under construction in southeast Idaho near Georgetown is a \$7.5 million plant to produce calcium metaphosphate (ROCK PRODUCTS, April, 1957, p. 59). It is being built by Central Farmers Fertilizer Co., Chicago, Ill., a company formed by regional co-ops of which Illinois Farm Supply Co. is a member.

### Space for NAHB show to be assigned soon

Exhibit space assignments will be made, beginning August 19, for the 1958 convention and exposition of the National Association of Home Builders. The show will be held January 19-23 at the Conrad Hilton and Sherman Hotels and at the Coliseum, Chicago, Ill. Paul S. Van Auken, convention-exposition director, said the exhibit prospectus was sent to more than 2,800 manufacturers of building materials and home equipment.





**NOW...**

... higher capacity wet screening in the 8-48 mesh range with

## The Dorr-Oliver DSM Screen

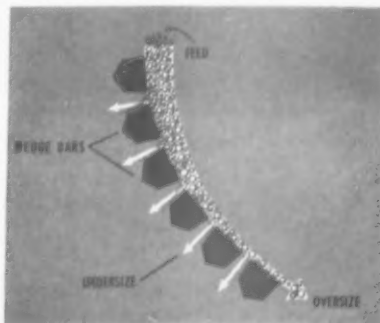
The latest and one of the most significant advances in the Dorr-Oliver line of classification equipment is the Dorr-Oliver DSM Screen . . . developed for the high capacity wet screening in the 8-48 mesh range.

Capable of handling exceptionally large flow volumes, the DSM Screen will effect separations at capacities greatly in excess of other units now operating in this size range. The compact and economical stationary design requires very little floor space . . . no special

For more information on this newest tool for the mining industries, write for a copy of Bulletin No. 2300, Dorr-Oliver Incorporated, Stamford, Connecticut.

support required other than that for piping. Installation and operating costs are low . . . no moving parts result in minimum maintenance.

Available in four standard sizes from 1 to 4 ft. in width the DSM Screen can provide from 200 gpm of 48 mesh undersize per ft. width to 500 gpm of 8 mesh undersize per ft. width.



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Illustrative drawing showing principle of separation



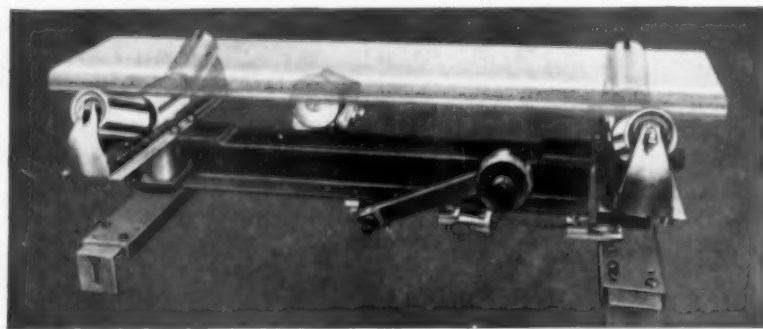
## Weigh it on the run ...with electronics

There are no labor costs to be charged against weighing when you incorporate a Fairbanks-Morse electronic scale in your belt conveyor system. The belt will be moving anyway, and might as well be accumulating the record of passing weight in the process.

Because it is electronic, the registering instrument of the new Fairbanks-Morse Electronic Belt Conveyor Scale can be located remotely—for instance in the office with the rest of your business and accounting machinery.

Accumulated weights are read on the remote instrument in digital figures, and there are other indicators to give you a running check on the general efficiency of your conveyor operation. A meter shows percentage of load at the given moment; another shows the rate of tonnage movement per hour.

There's a new bulletin, No. ED-12, on the Fairbanks-Morse Electronic Belt Conveyor Scale. Please write for it today. Fairbanks, Morse & Co., Dept. RP-8, 600 South Michigan Avenue, Chicago 5, Illinois.



### FAIRBANKS-MORSE

a name worth remembering when you want the BEST

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## ROCKY'S NOTES

(Continued from page 19)

crystallize independently from their fused mixtures." A slight difference only, but to us evidence of a meticulous attention to revision of the text, if only in small details. Equal care has been given to revision of such other clinker constituents as alumina and ferric oxide.

Much research has been done on phase relationships since 1935, and this has been taken into account, particularly the work of Myron A. Swayze, on the effect of MgO. The reference to phosphorus pentoxide as a constituent is especially interesting, for this has always been looked upon as "poison" in cement raw mix. In the original edition of the book it was stated: "If present in quantities of 1 to 2 percent it appears to be definitely deleterious." In the new edition it is said: "If present in quantities up to 2.5 percent, sound cement can be obtained by correct burning and proportioning, but the rate of hardening is slower." An explanation based on more recent research and experience is included.

Chapter V on the cementing qualities of the cement compounds does not appear to have required much revision. Chapter VI on the constitution of portland cement shows new illustrations of photomicrographs which demonstrate the progress made in this field of research. The new material appears to be derived largely from American research by Lerch and Brownmiller. The paragraphs on analysis of cements and on the calculation of the constituent compounds contain many new references, although the essential scheme of analysis developed by Bogue in 1929 remains the same.

Chapter VII on the burning of portland cement clinker contains much new material on heats of formation of clinker and on values of mean specific heats of the various constituents. A new section has been added on the influence of fineness and composition of the raw mix on the burning process. For example, it is stated: "Experience indicates that not more than 0.5 percent of silica particles above 0.2 mm. size, nor more than 1 percent between 0.09 and 0.2 mm., should be present in raw mixes with a lime saturation factor as high as 0.95, but that for a lower factor of 0.89, double these amounts may be permissible." This chapter also contains much other new material on factors influencing the compound content, the iron compound, the displacement of tricalcium

(Continued on page 217)

# HYSTAWAY® FOR PIT OR QUARRY OPERATIONS

## Secondary Breaking

Hystaway crane, equipped with up to 5,000-lb. drop ball efficiently handles secondary breaking.

## Jetty Stone and Rip-Rap

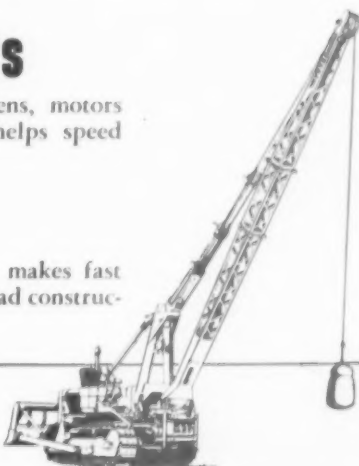
Handling and loading oversize rock accomplished with speed and economy with the Hystaway crane.

## Crusher Repairs

Lifting and positioning screens, motors and other parts, Hystaway helps speed repairs.

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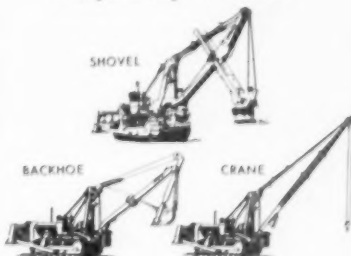
Standard front-end bulldozer makes fast work of floor clean-up, haul road construction and maintenance.



Hystaway mounts on Caterpillar D6, D7 or D8 tractors.

**FULL TRACK-TYPE  
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NO TAIL SWING  
FULL 240° SWING**

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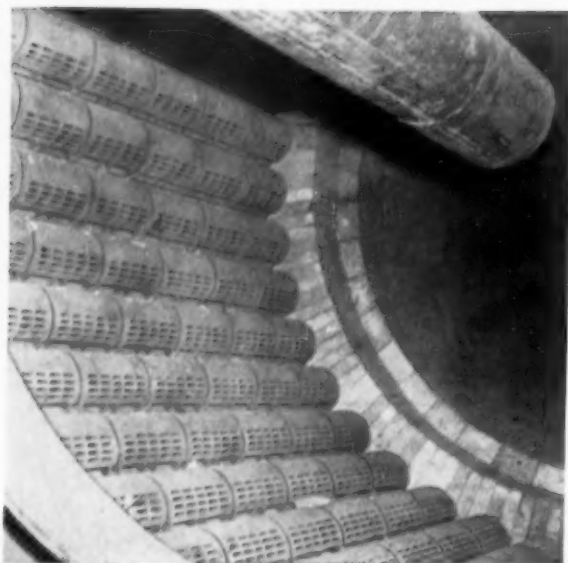
LIFTING CAPACITIES		
Tractor	Standard Boom Length	Capacity at Min. Radius
D8	35	9,200 lbs.
D7	30	7,600 lbs.
D6	25	6,200 lbs.

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# MANITOWOC DEVELOPMENTS



Interior view of Maniwowoc Type S Recuperator applied to Unit Fired Rotary Cement Kiln 11 ft. x 400 ft.

**to reduce  
production  
costs**

**Recuperator...**

**Slurry Agitator...**

- **MANITOWOC Recuperator for rotary kilns insures immediate quenching and maximum heat recovery.**
- **MANITOWOC Slurry Agitator provides thorough agitation and blending with minimum power and air consumption.**

The wide acceptance of the Maniwowoc Recuperator in the United States has led to important installations in South America, Australia and the Philippines.

The demand for units of high capacity has resulted

in our Type S design suited to kilns of maximum output. In all cases the Recuperator may be readily attached to an existing kiln, requiring the minimum of labor in erection, involving no foundations or brickwork and occupying minimum floor space.

## MANITOWOC SHIPBUILDING, INC.

General Offices and Plant, Manitowoc, Wisconsin

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## ROCKY'S NOTES

(Continued from page 215)

silicate field (in phase relationships) by minor constituents, deviation of compound content from calculated value, effect of rate of cooling on the properties, clinker structure, and phosphates in cement burning, etc., which were either not considered in the first edition or less adequately discussed.

Chapter VIII on the proportioning of raw materials contains a reference to Dahl's work, published originally in *Rock Products* and to some later A.S.T.M. reports. More information is given on the effect of gypsum as a result of the research by Lerch in the U.S.A. and Haegermann in Germany. Up to this point there are 168 pages in the new edition as compared with 141 in the old, which gives an idea of the amount of added material.

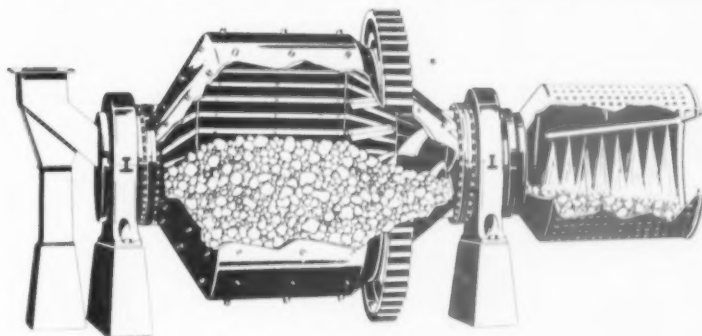
The most progress in research in the past 20 years has probably been in the field of cement hydration, and the end products of hardened cement and of concrete. Consequently, there is much evidence of the revision of Chapter IX on the hydration of portland cement, and in the subsequent chapters. For example, it is now conceded that the hydrated calcium silicates are crystalline but of submicroscopic size. The cement gel was previously described as "amorphous." There are numerous new references to research along this line. This chapter now contains 46 pages of text against 23 in the older one, and it is obviously entirely rewritten. We shall have more to say about some of the author's conclusions in the second part of our review.

Research on the setting and hardening of portland cement, discussed in Chapter X, has developed many new theories, and as to be expected, this part of the revised book has been entirely rewritten, with many references to American papers, such as those of Powers and Brownyard, Hubert Woods, Blaine and Vales, etc. This chapter has also been much expanded from the previous text. It now comprises 47 pages against 13 in the 1935 edition.

Chapter XI in the new book is on the structure of cement compounds, and is all new. It explains in language the layman can understand the application of X-rays and the electron microscope to research on cement and the silicates in general. A description of structural chemistry and its application to the study of cement components is also included. Here, for the

(Continued on page 219)

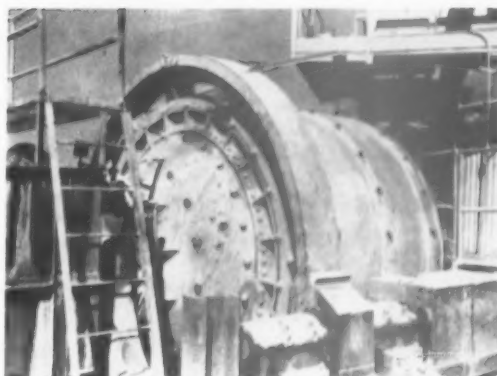
## HARDINGE SCRUBBERS FOR PIT-RUN MATERIALS



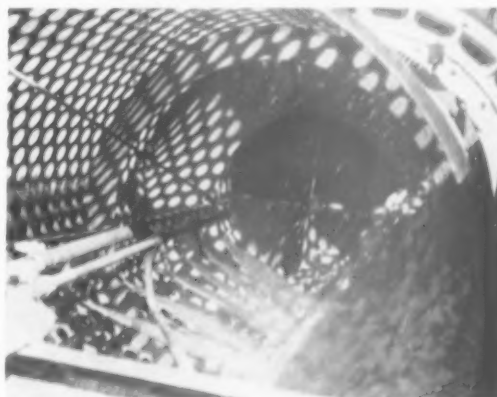
Large diameter, short length trunnions permit chute feeding of unsized ore and rock at rates up to 600 tons per hour.

The mass loading and ball-mill action in the scrubber quickly and completely slurries the clay and dirt, permitting ready separation on washing screens or trommels.

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ROCK PRODUCTS, August, 1957



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At Western Precipitation, we regard every challenge as a new opportunity—every industrial advancement as another stepping stone for demonstrating the all-around superiority of our equipment and services. Some recent Western Precipitation equipment FIRSTS in the cement industry include...

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- ✓ First two-stage Cottrell Precipitator installation on the new Fuller-Humboldt Preheat system!
- ✓ North America's first installation of selenium rectifiers on Cottrell Precipitators in a cement plant.
- ✓ Two installations of Cottrell Precipitators on a new recovery process using sludge from lime processing plants!

Whenever new dust collection problems arise, industry thinks FIRST of Western Precipitation Corporation!

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## ROCKY'S NOTES

(Continued from page 217)

first time in a textbook for cement chemists and operating men is an elementary treatise on structural chemistry with diagrams of the idealistic or pseudo-structure of tricalcium silicate. It is stated that the nature of the structure is such as to imply a high lattice energy. That means, of course, as we have repeatedly written in these pages, that hardened portland cement is still fundamentally unstable, at least at early stages, because it is never entirely hydrated.

We also note that, apparently, the old idea of hydration involving a theory of saturated solutions and instantaneous precipitation of new silicate compounds, has been abandoned. We have often contended it was illogical. Our author says that the structure of the hydrated cement is such as to provide proof that "at any rate the later stages of hydration are to be considered as a solid state reaction." The "holes" in the structure are thus accounted for.

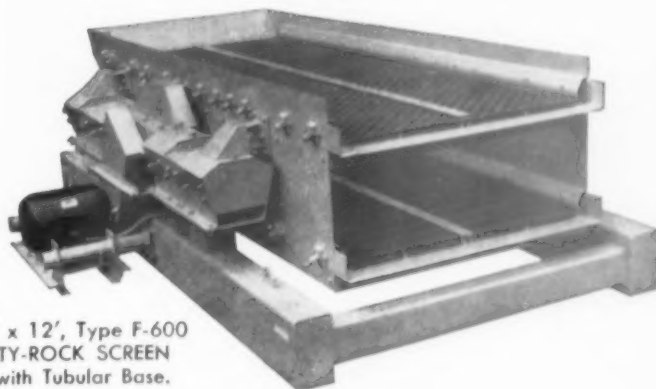
The remaining chapters deal with the properties of cement and concrete, and the effects of various environments on these properties. These lead to discussion of various special cements, such as pozzolanic, designed to meet special requirements. Here, of course, there are many references to American literature because this country has been a leader in such developments, or at least a leader in trying them out on a large scale. This last one-third of the book, dealing more especially with the use of various types of cement, and with concrete, will be found of equal interest and value to the engineer user. It has obviously been completely revised and rewritten to bring experience up to date, and it is one factor which makes this textbook so helpful to the industry. In other words, it is a book for practical use, rather than a summary of research results.

END

### Fly Ash Data

BITUMINOUS COAL RESEARCH, INC., 121 Meyran Ave., Pittsburgh 13, Penn., has compiled Booklet 600-910, "Fly Ash for Use as a Construction Material." The information results from a BCR project to develop new uses and expand present uses for fly ash. Sources and specifications are included. Copies may be secured for \$1.00 each from the headquarters of the association.

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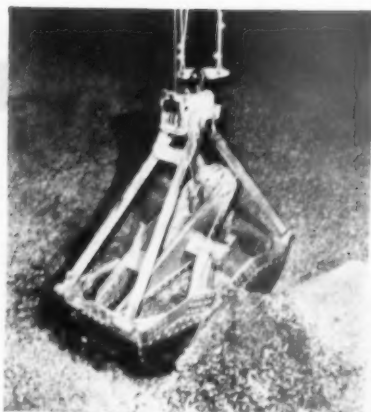
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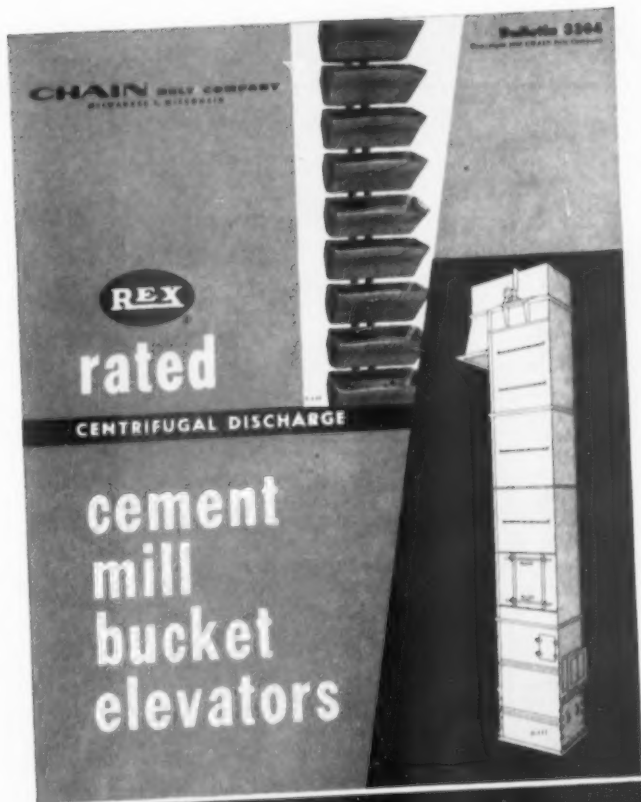


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time and less horsepower dollar and maintenance per pound of lift, Rex Engineers have done the complete job. The Rex Elevators are new: the bearings—the chains—the sprockets—the buckets—the take-ups.

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# NEW U.S. PATENTS

OLIVER S. NORTH

## Recently issued patents on nonmetallic minerals\*

### Gypsum

2,785,988—An improved floor and road surfacing material comprises alpha **gypsum**, a lime-reactive silica such as fly ash or **diatomite** and an hydrous metal sulfate, for example anhydrous calcium sulfate. (H. Lipkind, A. I. Sherer and M. H. Zara. Assigned to L. Sonneborn Sons, Inc.)

2,787,324—A device for use in cutting precision holes in **gypsum** wall-board, especially after application of the unit at the job. (to J. T. Hartmeister and E. Rodenberg, Sr.)

2,794,400 — Improved pump for placing slurries of **gypsum** plaster, **portland cement** stucco, and the like. Provision is made for maintaining continuous slurry flow during temporary stoppage of material in the conduit. (to A. G. Bodine, Jr.)

### Mineral Wool

2,793,395—This apparatus for spinning **mineral wool** constitutes improvements on U. S. Patent 2,689,373, to same patentee. In order to cool the molten slag from the spinning disk before subjecting it to the steam blast, the axis of the disk is inclined and air under pressure is supplied to the periphery of the disk. Molten slag flows by gravity directly onto the disk. (to C. D. Richardson. Assigned to Charles Richardson Corp.)

### Phosphate Rock

2,792,297—In a process for producing treble superphosphate, Permin-type **phosphate rock** composed of phosphate-rich oolites and a softer, phosphate-poor matrix is mechanically disintegrated and the larger oolites are separated from the matrix fines. The latter are treated with sulfuric acid, and the oolite particles are then treated with the phosphoric acid to form phosphorous-enriched treble superphosphate. (to A. C. Mohr. Assigned to Stauffer Chemical Co.)

2,794,729 — Improved method for

sintering finely divided, low-grade **phosphate rock**. Recycle fines from a previous sintering operation are blended in with each fresh ore charge. (to R. A. Russell. Assigned to Monsanto Chemical Co.)

2,795,484 — Improved method of producing low-fluorine phosphatic animal feed products from phosphate rock. (Assigned to International Minerals & Chemical Corp.)

### Cement

2,793,958 — Method for manufacturing **portland cement** whereby petroleum refinery spent adsorptive clay is used both as a raw material and as a source of fuel. (to S. J. Hetzel. Assigned to Sun Oil Co.)

2,794,748—A method for producing a high-strength, rapid-setting **portland cement** whereby concrete made therewith will not be susceptible to unsoundness caused by hydration of the lime content. This is accomplished by making a carefully proportioned mixture of large particles of clinker and the usual extremely finely ground material. (to G. Walter.)

Figure 1, below, is a schematic drawing showing particles of finely

ground cement, while Fig. 2 is a representation of mixtures of fine and coarse cement particles as described in this invention. It will be noted that more surface area is available in Fig. 1 than in Fig. 2. This increased surface area permits formation of a greater quantity of undesirable gel "c" per unit volume. Figure 3 is a side elevation view of the testing device used to measure expansion of test pieces.

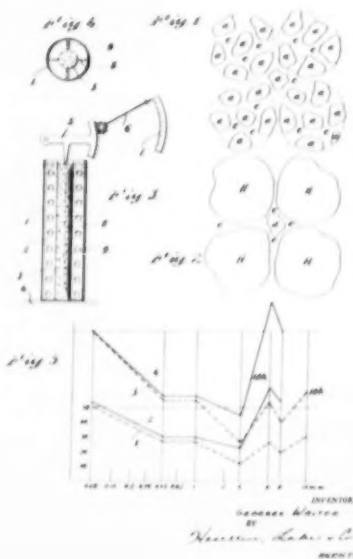
Portland cement clinker is ground to a fineness of 95 percent minus 170 mesh. More of the same clinker is separately ground to provide larger particles, which are segregated into carefully sized fractions. Test pieces are made up combining certain proportions of finely ground clinker "a" and clinker of a larger particle size "A". Test pieces are allowed to set, measured for length, boiled 48 hours and again measured. Optimum grade of coarse particles preferred for use with the finely ground cement is determined by those samples which show an expansion no greater than that shown by test pieces made solely with the fine material. Usually, clinker particles as large as 6 to 3 mesh (Tyler screen) can be used. Because of variable lime content of different clinker, it is advisable to test frequently or continuously to maintain accurate control of the product.

2,795,318—Method of and apparatus for conveying pulverulent material. The apparatus combines features of both fluidized and vibratory conveyance. Examples cited show its successful use for conveying ground **fluorspar** and also **portland cement**. (to J. M. Morris. Assigned to Carrier Conveyor Corp.)

2,795,507—An oil well cement having retarded set properties is made by admixing with **portland cement** an agent selected from the group of acid sulfobenzylcellulose and their water soluble salts. (to H. H. Kaveler. Assigned to Phillips Petroleum Co.)

2,795,508—An oil well cement having retarded set properties is made by admixing with **portland cement** a sulfoalkyl cellulose ether or a salt there-

(Continued on page 224)



\*Copies of United States patents are available at a cost of 25 cents each from The Commissioner of Patents, Washington 25, D.C. For convenience, coupons, each good for one copy of any patent, may be purchased from that office at the rate of \$5.00 per 20-coupon pad or \$25.00 per 100-coupon pad.



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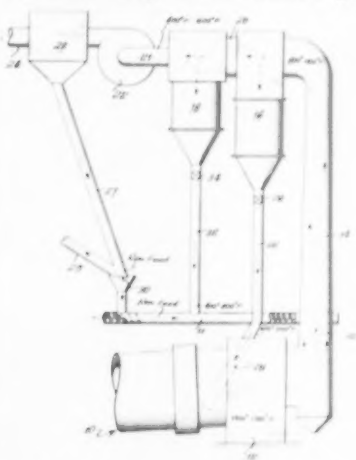
## NEW U. S. PATENTS

(Continued from page 222)

of. (to H. H. Kaveler. Assigned to Phillips Petroleum Co.)

2,796,249—A method and apparatus for preheating raw material prior to its introduction into a rotary kiln for dry-process manufacture of **portland cement** clinker. Kiln stack gases are used as the source of heat. Cyclone separators selectively direct the major fraction of the heated particles into the kiln, and the smaller fraction, mainly fines, is returned to the preheater. (to R. J. Plass. Assigned to Western Precipitation Corp.)

The drawing below is a schematic representation of this system. Arrows indicate flow of material. Proportioned and ground raw material is fed through inlet 29 to screw conveyor 31, which drops it into exhaust gas



stack 14. The material is heated during its movement up through the stack and into cyclone 16. In cyclone 16 most of the larger particles, usually about 70 percent of the total feed, is collected and fed by gravity through duct 25 to rotary kiln 10. The remainder of the particles pass to cyclone 18, where they are collected and returned to the preheater system via duct 35. Extreme fines are electrically precipitated by precipitator 23 and recirculated. Gases are kept moving by means of blower 22. Piping for this system has a minimum of heat-dissipating duct work, and no sharp bends which result in drop of gas velocity and subsequent clogging.

### Spodumene

2,793,933—In an improved process for recovering lithium salts from **spodumene**, the crushed ore is converted to gamma spodumene by flux-calcining at about 1,300 deg. C. The calcine is cooled, finely ground and

(Continued on page 226)





**JAEGER "600" ROTARY** easily powers dual 4" drill rig in 18' limestone ledge at Nelson Brothers quarry, Lathrop, Kansas.

Compressor maintains plenty of reserve power behind the drills at characteristic slow, economical operating speeds.

## How Jaeger air cuts drilling cost

Same mobile "600" saves money in quarry and on 450,000-ton excavation for Turnpike

With its Model 6-71 GM diesel engine easing along at fuel-saving speeds that never reach 1650 rpm, this truck-mounted Jaeger "600" rotary compressor powers two 4" drills at top production efficiency in limestone quarry supplying concrete and road aggregates.

Over long hours of steady drilling, the slow-speed, efficient operation of the Jaeger "600" (1650 rpm full load speed instead of 1750-1800) means substantial savings in fuel and engine and compressor wear. These savings were repeated when Nelson Brothers, the owners, shifted their mobile rig to a 450,000-ton rock excavation project for the Kansas Turnpike.

Slow-running, efficient performance, resulting in fuel economy, fewer fpm of engine piston travel and thousands fewer compressor revolutions per hour, is characteristic of all Jaeger rotaries. Smaller units (125, 250 and 365 cfm) deliver full volume at 1700 rpm versus 1800 to 1950 rpm in similar compressors having no more than equal, and often less, air capacity.

It will pay you to make your next compressor a Jaeger. Call or visit your Jaeger distributor for full details and prices, or write us for Catalog JCR-5.



**LOGS 400' (IN 12'-18' DEPTHS) PER 8-HOUR SHIFT, IN HARD MISSOURI LIMESTONE:** Using only 36 gallons of fuel per 8 hours, Jaeger "600" powers two 4" drifters to this average daily production in Federal Materials Company underground quarry, Cape Girardeau, Mo. Jaeger slow-speed, high efficiency performance saves fuel and wear on every job.

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ROCK PRODUCTS, August, 1957

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## NEW U. S. PATENTS

(Continued from page 224)

extracted with HCl or NaCl at super-atmospheric pressure and elevated temperature. (to A. V. Kroll. Assigned to Compagnie Geologique et Miniere des Ingenieurs et Industriels Belges "Geomines" Societe Par Actions a Responsabilite Limitee.)

2,793,934—Cyclic process for roasting **spodumene** or lithium-bearing pegmatites and recovering high purity lithium carbonate from the lithium chloride gas thus evolved, with production of **portland cement** clinker as a byproduct from the roasting step. (to G. L. Cunningham. Assigned to Chempatents, Inc.)

### Aggregates

2,793,957—Oil well concrete having relatively high permeability to liquids is made from a slurry of **portland cement**, a pozzolan, and a mixture of lightweight aggregates having different particle sizes. Among suitable aggregates are listed **pumice**, **volcanic ash**, **diatomite**, expanded **blast-furnace slag**, expanded **clay** or **shale**, expanded **perlite**, and expanded **vermiculite**. (to G. B. Mangold, J. A. Dyer and J. T. Hart. Assigned to Petroleum Engineering Associates, Inc.)

2,794,752—The tensile strength of a lightweight, cellular concrete block made by expanding with aluminum powder a slurry of **portland cement**, **lime**, **diatomite** and **asbestos** fiber can be improved by impregnating the hardened material with a silicate or thermoplastic resin. (to B. Schmidt. Assigned to Internationella Siporex AB.)

2,795,542—A soil bed suitable for receiving septic tank effluent is made by admixing into the soil surrounding the outlets a cellular inorganic material. **Pumice** is preferred, but **volcanic scoria**, **diatomite** or expanded **perlite** can be used. Aerobic bacterial life, which is essential to proper disposal of septic tank liquids and solids, is supported during flooding of the bed by air held in cells of pumice and similar materials. In addition, a pumice-conditioned soil permits desirable development of plant roots in the bed. (to F. F. Horne and T. J. Edwards. Said Edwards assigned to said Frederick F. Horne, Robles Del Rio, Calif.)

### Miscellaneous

2,787,557—Compositions for coating marine articles to render them resistant to marine organisms comprise cut-back-coal-digestion pitch mixed with **talc**, ground **mica**, **clay** or **slate**

(Continued on page 228)

## Needed Fines Saved ... Clay Rejected



### AN EAGLE WATER SCALPING-CLASSIFYING TANK REPLACES THREE CONE CLASSIFIERS at Becker County Sand & Gravel Co., Lillington, N. C.

Recent revamping of Becker County Sand & Gravel Co.'s Lillington, N. C., plant included installation of an EAGLE 32' Water Scalping-Classifying Tank with automatic bleeder valves and metering "splitter" gates, to replace three 24" cone classifiers. Improved removal of clay and silt has resulted and retention of fines accomplished. Concrete sand is their main product, some masons sand being produced.

Formerly material was routed from a wet scrubber screen to two 36" dia. single screw washer-classifier-dehydrators. Excessive wash water overflow from these screws was pumped to the cones to salvage fines. Now, the fines retention is done initially, with the water scalping-classifying tank ahead of screw units. The precipitated material from the classifying tank flows through a multi-cell collecting-blending flume to the screw units for further removal of silt and clay, final classifying and final dehydrating. The multi-cell flume provides for wasting of excess coarse material when necessary.

The unbeatable combination of an Eagle Water Scalping-Classifying Tank with one or more Eagle Screw Units has solved problems for hundreds of aggregate producers—enabled them to meet specifications—increase their profits through low maintenance equipment. Learn what "tried and true" Eagle Equipment can do for you—send for catalog!

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## NEW U.S. PATENTS

(Continued from page 226)

dust, and an abrasive filler such as blasting sand or roofing granules. (to J. C. Christensen and W. F. Fair, Jr. Assigned to Koppers Co., Inc.)

2,788,323—In a method for stopping loss of circulation in oil wells, lightweight expanded limestone is added to the drilling fluid to act as a bridging material in porous formations. Expanded limestone is made by heating a mixture of sodium silicate and crushed limestone. (to A. Brakel and N. Healey. Assigned to Shell Development Co.)

2,791,562—Borax is one of the ingredients used in manufacturing the subject dry detergent compositions. (to W. J. Duffley.)

2,793,128—Alumina cement is used as the aggregate bonding agent in the manufacture of refractory articles, such as fused silica brick, fire brick, alumina brick, and the like, having improved unfired strength. (to D. E. Emhiser. Assigned to Pittsburgh Plate Glass Co.)

2,793,131—A process for manufacturing high temperature insulating shapes from a slurry composed of a large proportion of diatomaceous earth and smaller proportions of asbestos, lime, bentonite and normal magnesium carbonate. (to M. E. Binkley. Assigned to Johns-Manville Corp.)

2,793,949—Improved mixtures of metallic and nonmetallic materials can be made by adding a wetting agent thereto. Nonmetallics that can be successfully wetted include emery, corundum, garnet and diatomite. Some nonmetallic minerals such as kaolin, mica, talc, asbestos and bentonite, can serve as wetting agents for other nonmetallic minerals in such mixtures. (Assigned to G. Imich.)

2,795,103—A vehicle muffler for neutralizing poisonous CO<sub>2</sub> gas. The packing material surrounding the fresh air conduit is preferably mineral wool, while the screen filtering material can be mineral wool, asbestos fiber or lime with bone ash. The filter materials may be mixed with foamed gypsum plaster to form a porous, cake-like mass. (to G. Jenison.)

### Sylvinite

2,792,289—An economical counter-current decantation leaching method and apparatus for recovering potassium chloride from sylvinite. (to W. P. Wilson. Assigned to United States Borax and Chemical Corp.)

END

ROCK PRODUCTS, August, 1957

# STEEL

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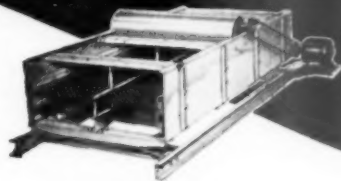
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## **HERE'S LOADER MOBILITY... EXCAVATING STRENGTH**

**LOADS** 1½ CU YD AT A PASS . . . 2¼ yd with light materials bucket. Lifts up to 11,200 lb.

**WORKS RIGHT UP ON A STOCKPILE** where wheels dig in. Can build stockpiles higher, store many more yards of material in a given area.

**URNS IN ITS TRACKS** . . . where many smaller loaders have to jockey.

**DIGS INTO HARD-PACKED MATERIAL** . . . exerts 20,000-lb break-out force, with 72 net engine hp and modern bucket design.

These are just four examples of how an Allis-Chalmers HD-6G tractor shovel offers a combination of strength, traction, flotation and mobility that enables it to replace a fleet of part-time specialized machines. You can count on it to boost production the year round. Ask your Allis-Chalmers dealer about the HD-6G . . . also the three larger tractor shovels with capacities up to 4 cu yd. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

**ALLIS-CHALMERS**

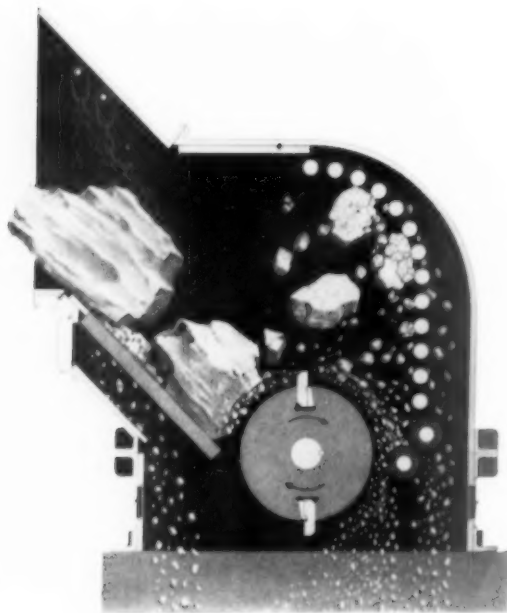
*Engineering in Action*

**FOR GREATEST**

**POSSIBLE**

**REDUCTION**

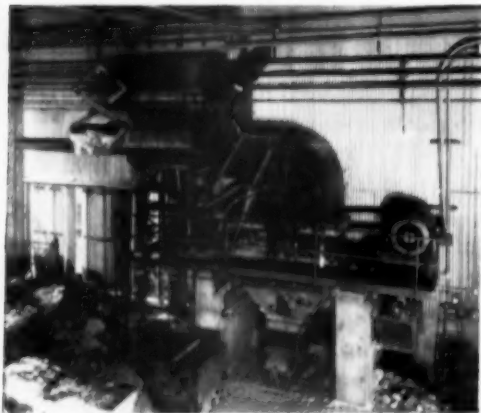
**IN ONE PASS...**



## THE JEFFREY ROCK BUSTER



24-inch carbon electrodes, 6 feet long, have been fed to this Rock Buster for seven years. Plant engineers are "amazed" at its continued fine performance.



Carbide, always a difficult material to handle, is literally exploded by impact in the Jeffrey Rock Buster and made ready for further processing.

Enter 1141 on Reader Card

Superior in performance and economy, this hard-hitting giant with its high speed impeller bars strikes the material in suspension . . . continues to wallop it until it's broken down to the desired size.

Feed the Rock Buster large, friable, non-abrasive materials and they're quickly reduced to a product of market size. (No wet or sticky materials; that's a job for the Jeffrey Mud Hog.) Size of finished product can be adjusted to meet your various requirements.

Crushing elements are made of manganese steel, enabling them to stand up in the toughest service. For a copy of Bulletin 854 describing the Rock Buster, write The Jeffrey Manufacturing Company, 935 North Fourth Street, Columbus 16, Ohio.



**JEFFREY**

CONVEYING • PROCESSING • MINING EQUIPMENT . . .  
TRANSMISSION MACHINERY . . . CONTRACT MANUFACTURING

# GET HIGH QUALITY AGGREGATE from low grade sources



WEMCO HMS (Heavy Media Separation) can remove deleterious material such as shale, chert, soft-stone, wood and coal from low grade deposits. The finished product is specification aggregate universally accepted for concrete that must stand up under severe outside exposure. The cost of HMS treatment can be far less than the transporting of material from more distant sources.

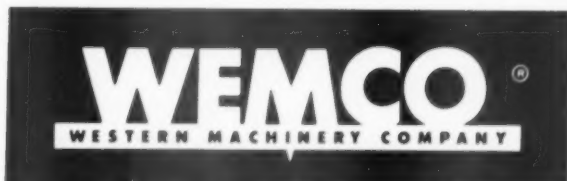
## A POSITIVE SEPARATION BY PARTICLE DENSITY ALONE

HMS will work wherever there is a known difference in specific gravity between deleterious material and the desired gravel. It floats one and sinks the other. The separating medium is a suspension of fine magnetic particles in water. It can be adjusted to any needed specific gravity. Make-up costs are only two to six cents per ton of aggregate.

## WEMCO MOBIL-MILLS ARE YOUR INDUSTRY'S CHOICE

To date every HMS user in the sand and gravel industry has chosen the Wemco Mobil-Mill. It is a complete plant — pre-engineered — pre-fabricated — and of pre-determined cost. It is so thoroughly proven in design that it operates from the first day. It goes up in minimum time and at minimum cost. Then it knocks down and moves on when the deposit is exhausted. The Wemco HMS Mobil-Mill is available in capacities from 5 to 500 tons per hour.

Write today for further information



Dept. J-2210 650 FIFTH STREET • SAN FRANCISCO 7, CALIFORNIA

50 CHURCH STREET • NEW YORK, NEW YORK

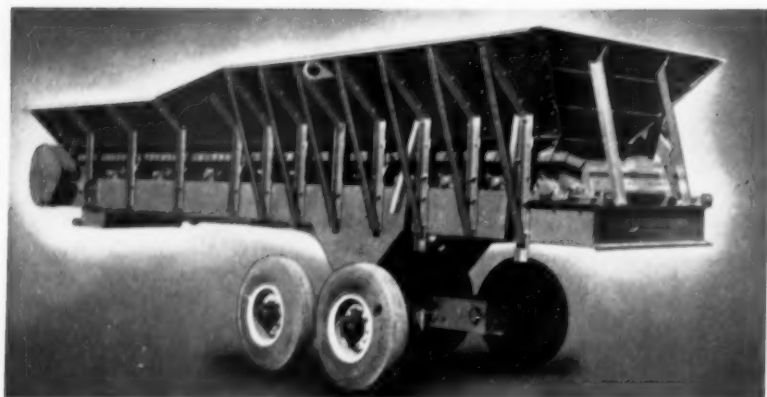
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Representatives in principal cities of the United States and Canada  
and in major countries throughout the world.

# NEW

## MACHINERY



### Redesigned feeder line includes 50 types and sizes

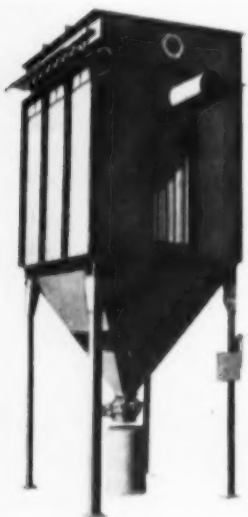
PIONEER ENGINEERING, Division of Poor & Co., Inc., 3200 Como Ave., Minneapolis 14, Minn., is introducing a newly redesigned line of apron feeders, including more than fifty types and sizes of unit feeders and two sizes of portable apron feeders. The basic unit feeder is driven by one of three standard drives: (1) from feeder-mounted electric motor through torque-arm reducer or from gearmotor or motor reducer; (2) from conveyor tailshaft; or (3) from crusher shaft or countershaft.

Standard pan widths are 30, 36, 42 and 48 in., and lengths are 4, 6, 8, 10 and 12 ft. The long portable apron feeder (illustrated), mounted on its own chassis and wheels and with hopper attached, is available in either the 36 in. x 30 ft. or 42 in. x 30 ft. sizes.

Enter 100 on Reader Card

### Dust collector features continuous filter cleaning

PULVERIZING MACHINERY DIVISION, Metals Disintegrating Co., Inc., Chatham Road, Summit, N.J., announces



the Mikro-Pulsaire dust collector, which employs a new method of continuous filter cleaning and has no internal moving parts.

The collectors are available in units with 9, 20, 30 and 48 filter tubes of either 4 or 6 ft. length. Capacities range from 400 and 600 cfm. in the smaller nine-tube units to 3,350 and 5,000 cfm. in the Model 48 unit. Modular construction permits units to be assembled in multiples of 48 bags or filter tubes for handling larger air volumes. The model illustrated is the 48-6 (having 48 filter tubes 6 ft. long) showing filter compartment open.

The principle embodied in the new collector involves cleaning the outside of the filter elements with a jet of high pressure air that produces a reverse flow. Jets are controlled by a series of solenoid valves actuated by an adjustable electric timer. A single filter tube is cleaned at a time, permitting continuous operation of the collector.

Enter 101 on Reader Card

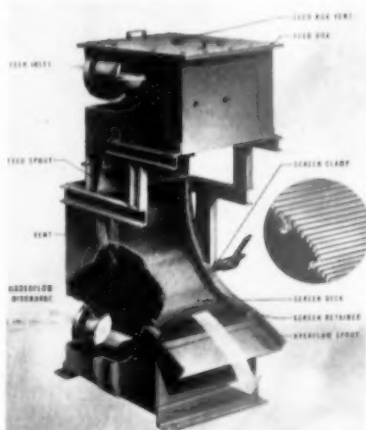
### Air compressor

INGERSOLL-RAND CO., 11 Broadway, New York 4, N.Y., has developed a new air compressor, the "Channel-Flo". It is a two-stage, 200 psig. rated motor compressor now available in 1½ and 2-hp. sizes. The complete unit includes the compressor, cushioned rubber mounting on an ASME vertical tank, interconnecting piping and fittings and automatic start-stop control.

Belt drive is eliminated because the compressor is flange-mounted directly on the driving motor. Thus, the Channel-Flo requires less floor space. It can also be mounted on a shelf, side wall or overhead bracket.

Enter 102 on Reader Card

### Wet slurry screen

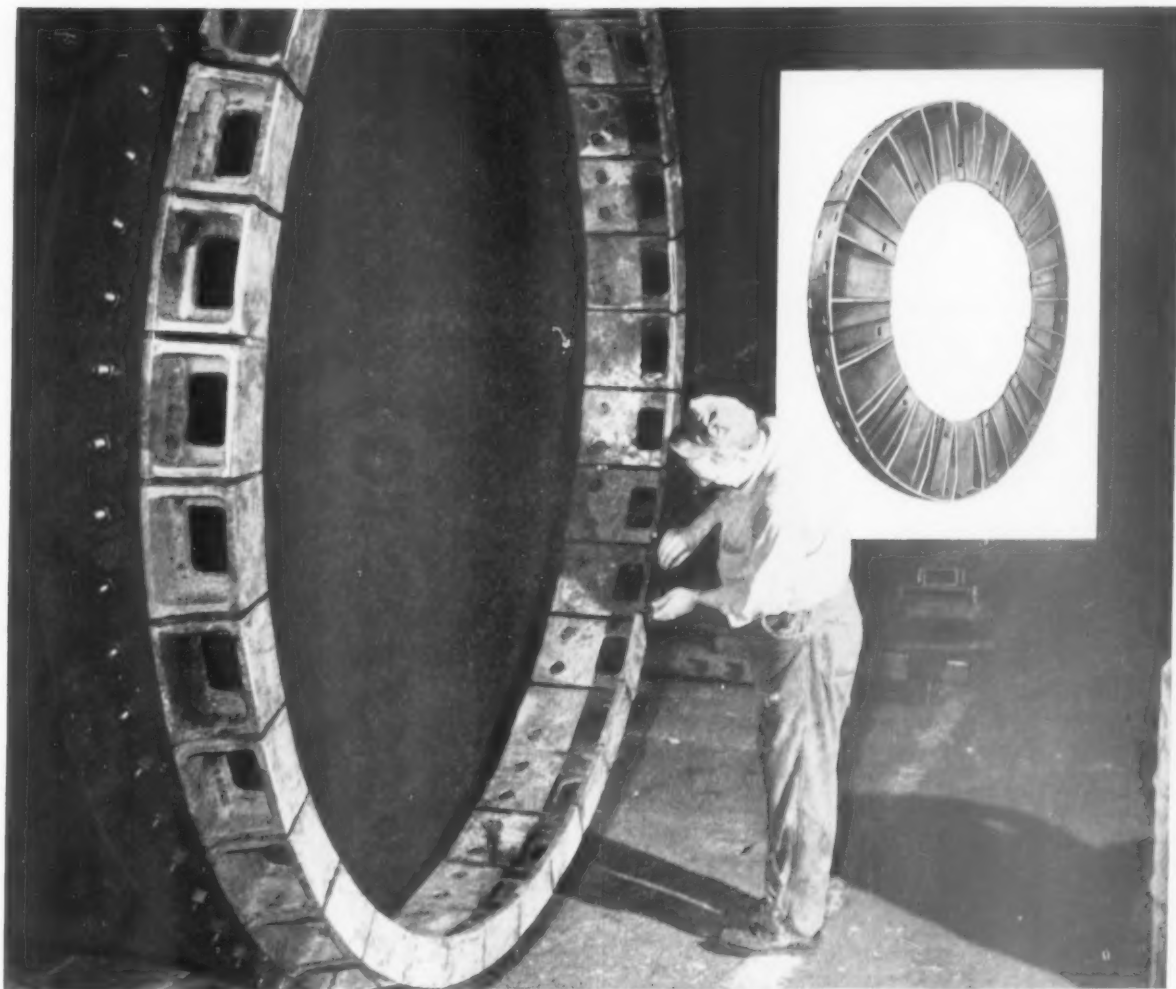


DORR-OLIVER INC., Barry Place, Stamford, Conn., announces availability of the DSM screen for continuous wet screening of slurries containing non-fibrous solids. The company has exclusive patent rights to the screen from the Dutch State Mines in the Netherlands.

The DSM screen is a concave, horizontal-wedge-bar type, secured in a stationary housing. A feed box distributes incoming slurry across the full width, with feed striking the curved surface tangentially. Flowing by gravity, slurry strikes edges of succeeding bars, with layers sliced off until only oversize solids remain. These are de-

(Continued on page 234)





**IN CEMENT, LIME, AND DOLOMITE PLANTS...**

## **B&W Nose and Tail-Ring Castings Demonstrate Longer Continuous Service**

Longer brick life and longer continuous service are being attained by 275 kilns in 54 plants using B&W Nose and Tail-Ring Castings. In many cases, the life of these castings has exceeded 9 years.

Light and strong B&W Alloy Castings have improved kiln performance in most installations. Made of heat-resisting Grade HH alloy, nose ring castings eliminate bellling out of the kiln shell, assuring longer brick life and longer continuous operation of the kiln. By protecting the end of the kiln shell from direct flame, the nose ring castings prevent "feathering-down" of the shell because of oxidation. Their design eliminates cracking and warping, experienced with large size castings.

Small size and light weight make B&W Castings easy and inexpensive to install. The protecting

flange on the nose ring castings permits the use of low-alloy steel bolts for fastening.

Spare part inventory may be kept low because the same nose ring castings may be used on kilns varying up to 4 feet in diameter, depending upon size. Write for Bulletin S-17. The Babcock & Wilcox Company, Process Equipment Department, Barberton, Ohio.

S-467

**BABCOCK  
& WILCOX**



BOILER  
DIVISION

Enter 1140 on Reader Card

## NEW MACHINERY

(Continued from page 232)

flected upward to follow curvature of the screen to the discharge lip.

The screen is available in four standard sizes ranging in width from 1 to 4 ft. Capacity is 200 gal. per foot of width per minute when making a 48-mesh separation. It runs as high as 500 gal. per foot per minute when producing an eight-mesh separation.

Enter 103 on Reader Card

### Short haul dumpers



AVELING-BARFORD, LTD., Morris House, 1-5 Jermyn St., London S.W.1, England, is manufacturing a shuttle dumper in 3, 4½ and 9-cu. yd. capacities. The dumper was designed to transport and dump rock on short hauls in mines and quarries.

A patented feature of the Aveling-Barford shuttle dumper is two-way steering that allows the driver to turn his seat in a 5-ft. circle and eliminate reverse driving. There are four speeds forward and four reverse. Power steering and hydraulically operated twin rams for fast unloading are other features emphasized by the manufacturer.

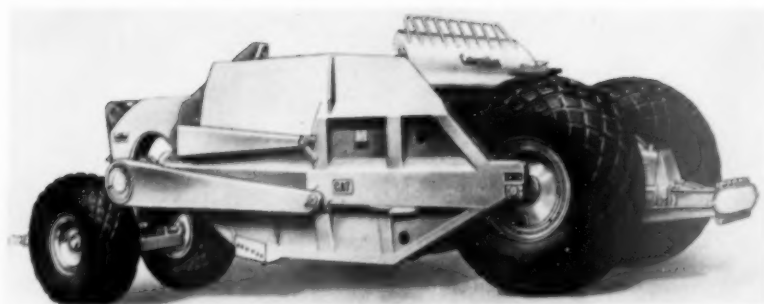
Enter 104 on Reader Card

### Crane carriers



FOUR WHEEL DRIVE AUTO CO., Clintonville, Wis., has introduced a new line of FWD carriers for cranes, shovels, backhoes and draglines. The line includes 15, 25 and 30-ton carriers. FWD also is offering a range of engine and wheelbase options. Engine options include 150-hp. BD-308, 212-hp. RD-501 and 216-hp. 145GK gas engines, plus several diesel models in the same hp. ranges.

Enter 105 on Reader Card



### New scraper has 82,000-lb. capacity

CATERPILLAR TRACTOR CO., Peoria, Ill., announces availability of the new No. 491 scraper, designed for use with Caterpillar D8 and D9 tractors. The new unit offers increased payload capacity—its 82,000 lb. is 12,000 lb.

greater than the former model—struck capacity of 27 cu. yd., and heaped capacity of 34 cu. yd.

Increased apron opening facilitates thorough positive ejection, which, together with high bowl sides and changes in shape and height of the ejector, permits easy handling of the larger loads. Tubeless tires are used.

Enter 107 on Reader Card

### Truck-mounted rotary drill



SCHRAMM, INC., 900 E. Virginia Ave., West Chester, Pa., has announced the Rotadrill, a truck-mounted rotary drill which features mobility and rapid set-up. Drilling is accomplished through a reversible hydraulic motor-driven head, mounted on a carriage that rides tracks mounted on the mast. The head and special slip holders eliminate the need for a rotary table. Maximum down pressure is 24,000 lb. and maximum lifting pressure is 19,000 lb. Holes can be drilled to 700 ft. with 4½-in. o.d. drill pipe, and to 1,500 ft. with 2⅞-in. o.d. drill pipe.

An air compressor driven from the truck engine delivers 450 cfm. at 20 psi.; however, air can be delivered at 200 psi. Standard rig equipment includes dust blower, primary chip box, hose, dust diverter, discharge stack, pipe rack on side of truck, dual fuel tanks, 65 rpm. rotation head, quarry type drilling and holding slips and air hoist with special hook for handling drill pipe.

Enter 106 on Reader Card

### Magnetic separator

STEARNS MAGNETIC PRODUCTS, Milwaukee, Wis., announces its ring-type "D" magnetic separator, which is designed to provide a method of determining the feasibility of magnetic concentration of minerals. The separator operates by passing the material through the high-intensity magnetic field produced by the rotating magnetic ring. The mechanism employs a "free lift" principle of separation, in that the magnetics contained in the feed material are lifted from the mixture passing beneath the take-off ring.

Enter 108 on Reader Card

### Chain repair link



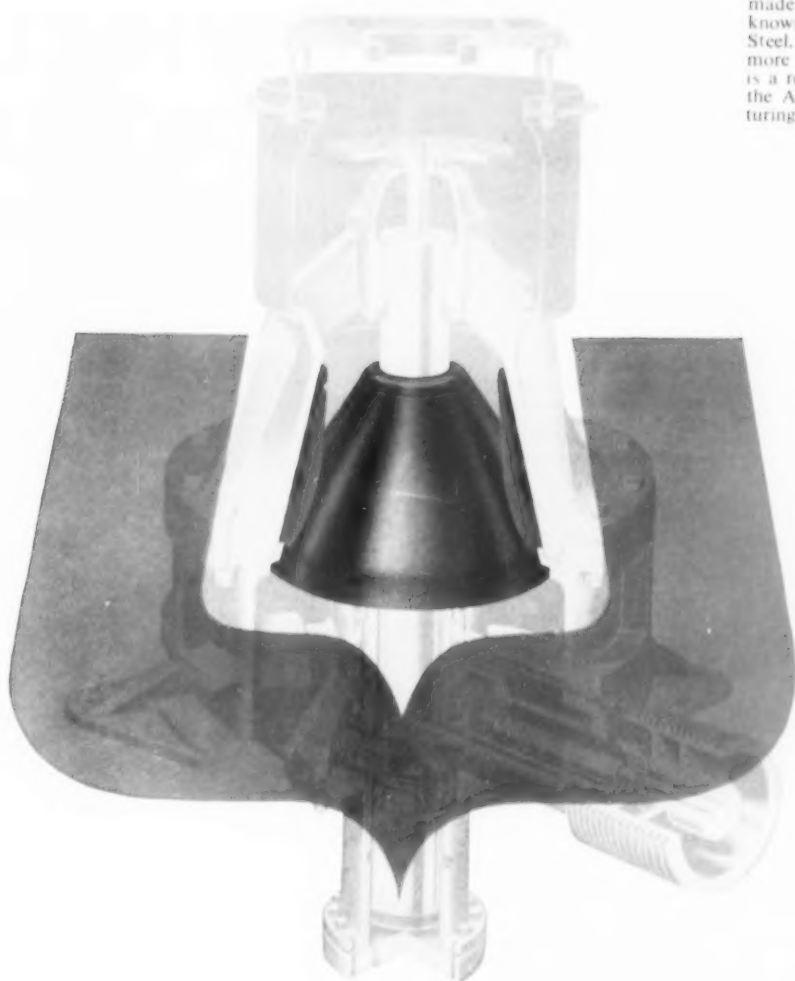
KENSINGTON STEEL, Division of Poor & Co., 505 Kensington Ave., Chicago 28, Ill., is introducing a repair link for hoist and drag chains. It consists of two identical half links and a combination key and wedge. The half links are run through the ends of the chain to be joined; when the wedge is driven into place, it automatically bends the key and locks the link together.

Kensington repair links are available in sizes from 1 to 3 in.

Enter 109 on Reader Card

(Continued on page 236)

Concave ring and mantle of this *Hydrocone* crusher are made of the toughest steel known . . . Amsco Manganese Steel. It gives a little, to take more punishment. *Hydrocone* is a registered trade-mark of the Alais-Chalmers Manufacturing Company.



## How a little give adds a lot of life to AMSCO CRUSHER PARTS

Both mantle and concave ring crush a lot more feed because of certain properties of Amsco<sup>®</sup> Manganese Steel. The metal *gives* a little under crushing forces, absorbs stresses, resists cracking and chipping. Yet these same forces work-harden the surface of Amsco Manganese Steel to as much as 500 Brinell . . . a high hardness, stubborn to wear.

Amsco Manganese Steel Crusher Parts main-

tain their ductile undersurface and work-hardened surface even when worn thin. That's why Amsco parts endure severe abuse for so many work hours without letup.

To be sure of getting Amsco Manganese Steel, order replacement parts from your crusher manufacturer. Amsco makes manganese steel parts for most manufacturers of crushing, grinding and pulverizing equipment.

*Amsco also produces other alloy steels with maximum wear resistance under particular service conditions*



# AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER • LOS ANGELES • NEW CASTLE, DEL. • OAKLAND, CAL. • ST. LOUIS • WILMINGTON, OHIO

ROCK PRODUCTS, August, 1957

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235

Why the LINK-BELT Series 100 is

# TODAY'S MOST WIDELY ACCEPTED BELT IDLER

*Here's what men who know idlers have to say*



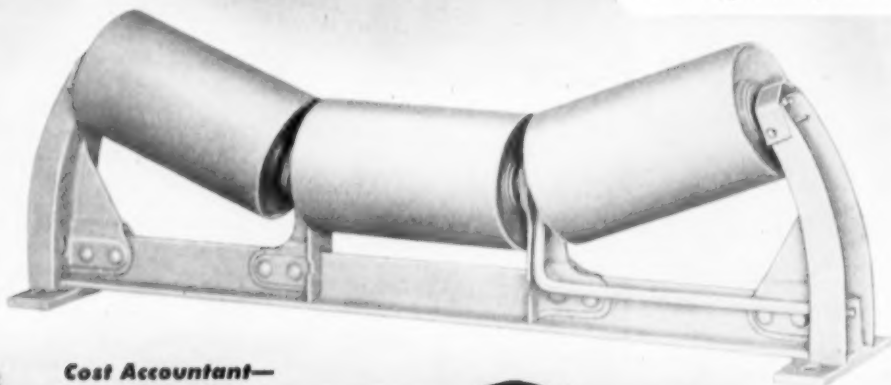
**Superintendent—**

"Service records of the Link-Belt Series 100 belt conveyor idler show that there's no more durable belt conveyor idler in the capacity range. It's a 'work horse'—gives economical service under hard duty, conveying all but the heaviest and coarsest materials."



**Engineer—**

"Look at these design features. Self-contained, concentric rolls with bearings fully enclosed and protected . . . strong heavy ribbed brackets and sturdy rigid frames maintain accurate roll alignment—won't spread under load . . . hex nuts that lock rolls in brackets, preventing shaft rotation."



**Cost Accountant—**

"All costs considered—installation, operation and maintenance. You won't find a better buy in belt conveyor idlers than the Link-Belt Series 100. Its free-rolling action requires less power . . . reduces wear on operating parts and belt . . . cuts replacements."



**Maintenance Man—**

"Its cartridge seal is the best I've seen . . . has no springs, clips and other small parts to lose . . . cuts servicing time when required. It's tops for keeping grease in, dirt out under the grimeiest conditions. Grease fittings are protected, easy to reach."

## Broad range of types meets all material and operating requirements

**R**UGGED . . . free-rolling . . . dirt- and dust-proof—the Link-Belt Series 100 belt conveyor idler combines these and other features for low-cost, dependable materials handling under severe, continuous service conditions. What's more, you have a wide choice of types for any requirement—whether you handle coal, sand, gravel or iron ore . . . sticky or free-flowing materials.

Sturdy rolls of the Series 100 are accurately machined for concentricity—welded for added strength and to keep out dirt and moisture. Smooth, round surfaces and edges prevent belt damage. As for dependability of its roller bearings—Link-Belt has never known a bearing failure due to overloading a Series 100 idler. Equally

important, strong malleable iron brackets and sturdy, rigid frames maintain accurate roll alignment.

For facts on the Series 100 belt conveyor idler, see your nearby Link-Belt office or authorized stock-carrying distributor. Or write for Book 2416.



# LINK-BELT

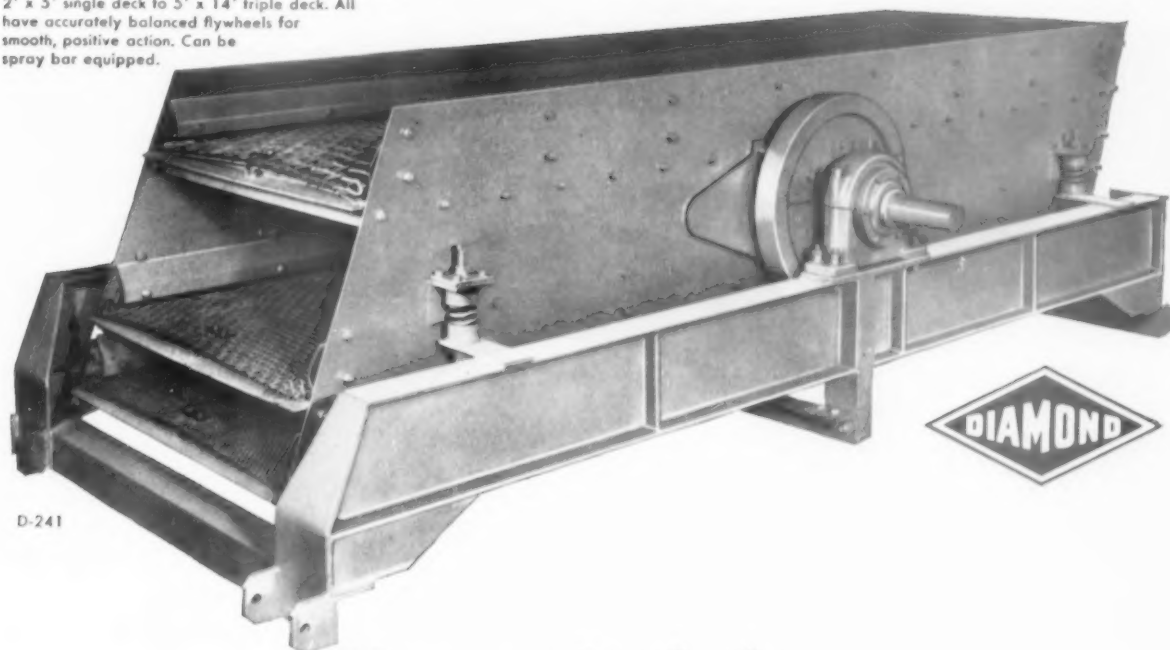
BELT CONVEYOR IDLERS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World.

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Diamond vibrating screens are available in sizes from 2' x 5' single deck to 5' x 14' triple deck. All have accurately balanced flywheels for smooth, positive action. Can be spray bar equipped.



D-241

## You can't choke a Diamond **BALANCED** Vibrating Screen!

No screen at any price works harder and does more than a Diamond. It's fast . . . does a thorough job of separating materials without clogging and can be depended on for long, trouble-free operation.

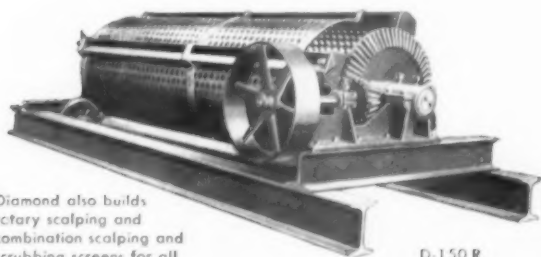
Here's why. Generous space between decks of a Diamond BALANCED Vibrating screen provides ample clearance for material to pass. High walls prevent overflow. An eccentric shaft transmits circular, pulsating motion with a pronounced vibration over the entire length and width of the screening area without affecting supporting members. And Diamond's method of screen cloth

anchoring with center rise causes material to automatically work toward the sides.

Operation and maintenance costs of a Diamond are kept way below levels that might normally be considered "acceptable."

You can choose your Diamond BALANCED vibrating screen from a variety of sizes and capacities. Reinforced side plates are standard, shackle or cable suspension mountings optional.

Every day, more and more companies are benefiting from the efficiencies and economies of Diamond BALANCED vibrating screens. Get full details today.



Diamond also builds rotary scalping and combination scalping and scrubbing screens for all kinds of heavy duty.

D-150 R

### DIAMOND IRON WORKS

DIVISION

GOODMAN MANUFACTURING COMPANY

Roll Crushers • Jaw Crushers • Conveyors • Screens and Washers

Feeders and Bins

Portable and Stationary Crushing Plants for Rock and Gravel

Holsted Street at 48th Place • Chicago 9, Illinois

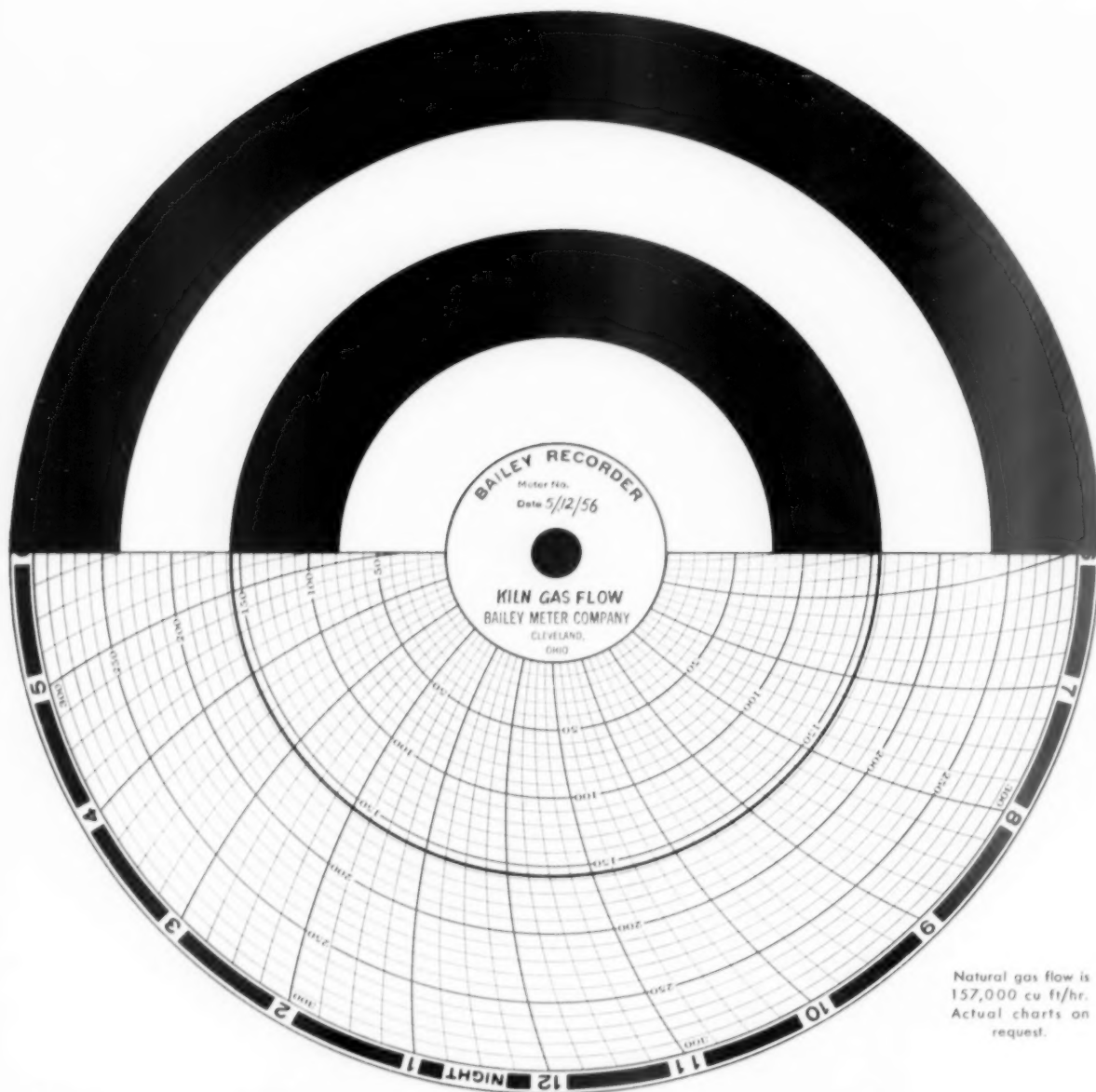
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Natural gas flow is  
157,000 cu ft/hr.  
Actual charts on  
request.

## More Cement—Fewer Upsets with bull's-eye performance

• Bailey Automatic Kiln Control keeps your kiln at peak performance for days at a time with little or no supervision. The necessary know-how for the proper selection and application of instruments and controls by Bailey Engineers has been derived from experience, tests, and successful installations. Kiln temperatures, feed, draft, fuel, and speed

are kept "in the groove" at maximum kiln capacity. Recorders show burner operators visual evidence of bull's-eye performance.

Let one of our application engineers help you plan for bull's-eye operation. Write for KILN CONTROL FOLDER complete with case histories and charts.

C-10

*Instruments and controls for power and process*

# BAILEY METER COMPANY

1039 IVANHOE ROAD • CLEVELAND 10, OHIO

In Canada—Bailey Meter Company Limited, Montreal



# LOOK TO DAYBROOK

... For a New Standard of Ruggedness on the "Rock Routine"!



The truck above was being backed to the edge of a quarry bank. The bank gave-way, causing the truck to roll end-over-end, coming to rest in an upside-down position. Within a few seconds after this picture was taken, the truck, equipped with a Daybrook Boulder Dam Style Dump Body, was righted and work resumed.

Daybrook Boulder Dam Style Dump Bodies feature sturdy wrap-around body construction—rounded inside corners for fast, clean dumping.

Daybrook Hoists are available in conventional arm, direct-lift, telescopic, and "Power-Up—Power-Down" models.

Daybrook builds a complete line of rugged hoists and bodies—well known for dependability in quarry operations.

Ask your distributor about Daybrook's built-in ruggedness on the "rock routine."



Daybrook Boulder Dam Style Body Model 1052  
with Daybrook Speedlift Hoist Model 77-C-138.

SEND DAYBROOK LITERATURE CHECKED BELOW:

34



ROCK BODIES—  
HOISTS

POWER LOADER

EXCAVATOR BODIES—  
HOISTS

POWER GATE

Sign below, attach coupon to letterhead, and mail in envelope.

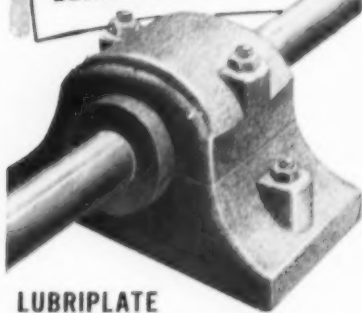
Name

**DAYBROOK**  
*Speedlift*®  
**TRUCK EQUIPMENT**

DAYBROOK HYDRAULIC DIVISION  
L. A. YOUNG SPRING & WIRE CORPORATION  
BOWLING GREEN, OHIO



## LUBRICANTS ESPECIALLY GOOD FOR HEAVY LOADS



### LUBRIPLATE

Nos. 130-AA, 630-AA and 930-AA

are grease type lubricants especially formulated for use in bearings and on other machine parts subject to heavy loads. Have extremely high film strength, marked adhesiveness and water repellence.

### LUBRIPLATE

Nos. 4 and 8

are most satisfactory fluid type lubricants over a wide range of temperatures. Due to their high film strength, they are ideal for use where heavy loads are encountered.

**REGARDLESS OF THE SIZE AND  
TYPE OF YOUR MACHINERY,  
LUBRIPLATE LUBRICANTS  
WILL IMPROVE ITS OPERATION  
AND REDUCE MAINTENANCE**

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Write for free "LUBRIPLATE DATA BOOK", ... a valuable treatise on lubrication. LUBRIPLATE DIVISION, Fiske Brothers Refining Company, Newark 5, N. J. or Toledo 5, Ohio.



Enter 1074 on Reader Card

## NEW MACHINERY

(Continued from page 234)

### "Anniversary" truck line



INTERNATIONAL HARVESTER CO., 180 N. Michigan Ave., Chicago 1, Ill., has introduced an "Anniversary Line" of International trucks that ranges from a half-ton A-100 series at 4,200 lb., GVW to the heavy-duty ACF-180 series at 33,000 lb. GVW. Pictured is the A-180, rated at 19,000-22,000 lb. GVW. It is powered by a 141 hp. International Black Diamond engine (154-hp., 308-cu. in. engine is optional).

The A-line offers a selection of models in four and six-wheel and all-wheel-drive conventional and cab-forward design. A choice of five gasoline and four LPG-fueled International valve-in-head, six-cylinder engines is available. Horsepower ratings are 112 to 154.

Enter 129 on Reader Card

### Centrifugal dust separator



THE DAY SALES CO., 810 Third Ave. N. E., Minneapolis 13, Minn., has developed the Day "HV" centrifugal dust separator. Made of heavy gauge welded

black steel, the unit is designed to permit handling of fibrous, granular, abrasive, fine or coarse dusts at normal or high temperatures. It can be used on pressure or vacuum. Units made of stainless steel are available if required.

The path of dust-laden air traveling through the "HV" is said to encounter a minimum of turbulence due to the scroll inlet and airfoil design inlet vane. A steep, smooth cone was designed for uniform and quick delivery of dust to the dust outlet. Improved cyclonic dust collection with low resistance, requiring less fan power, is said to result from these factors.

Twenty standard sizes are available. Groupings of any sizes can be furnished to handle any volume of air from 150 cfm. upwards.

Enter 130 on Reader Card

### Stepped end multiwall bag



CROWN ZELLERBACH CORP., 343 Sansome St., San Francisco 19, Calif., announces the "stepped end" pasted valve bag in which ends of each ply are cut in a stepped relation to each other. This allows each ply to be pasted to itself in the ends. The bottom of the bag is completely closed, while the top is closed except for a corner left open for filling on a valve packer.

Advantages claimed for the bags include: (1) stepped corners provide more flexibility and greater strength; (2) half sleeve insert insures positive spouting ability; (3) flexible valve opening allows spouting with one hand; (4) closure on corner opposite valve prevents blow-outs; and (5) outer ply slit and inner ply full diamond fold give maximum strength. The bags are custom-made to meet specific packaging requirements.

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END



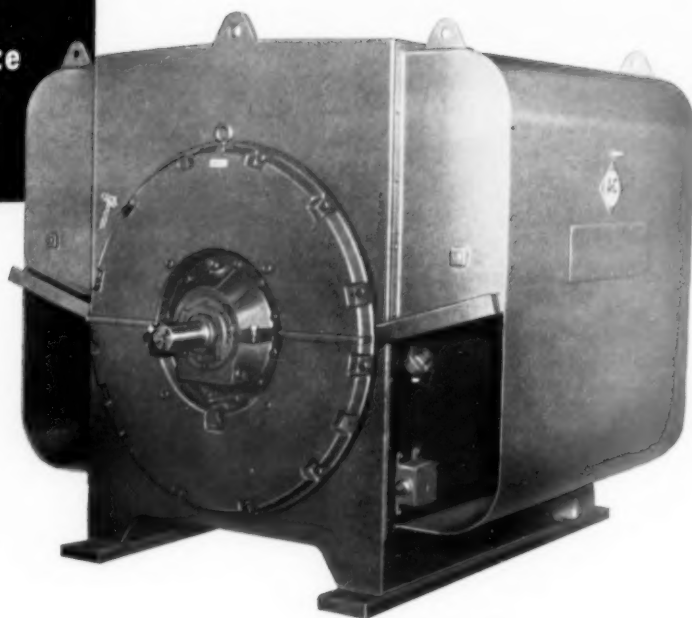


# Eliminate costly enclosures with Allis-Chalmers weather-protected MOTORS

**Modern features**  
cut operating, maintenance  
expense... give  
**MORE dependability**

**Here's a newly designed line** of Allis-Chalmers weather-protected motors with the ability to "take" outdoor conditions. This means no expensive protective enclosures are needed... a big saving in plant or installation building costs.

Designed to meet defined NEMA requirements, these motors incorporate many important features which assure dependable outdoor operation:



• **Ventilating System** — Low velocity intake, vertical lift, change of direction and high velocity discharge of ventilating air keep rain, snow, sleet, dust and dirt out of vital parts.

• **Removable Air Ducts** — To facilitate inspection and maintenance of interior air passages, air intake ducts are designed for quick removal.

• **Stator Assembly** — Removable as a unit, it simplifies maintenance and minimizes downtime.

• **Split Sleeve Bearings** — Capsulized design permits access to motor interior without disturbing the bearings or their enclosures. Positive vapor seal is used on high-speed motors. Antifriction bearings are available for slow speed motors.

• **Proven Insulation** — Famous Allis-Chalmers insulation systems (Class A and B) are available. And, for extreme temperatures, or where high resistance to abrasion and moisture is required, Allis-Chalmers can provide the revolutionary *Silco-Flex* system.

*Silco-Flex* is an Allis-Chalmers trademark.

**THIS DESIGN** available in ratings from 250 to 900 hp. Other designs in larger horsepower ratings are also available. Contact your A-C sales office or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin. Ask for Bulletins 51B8606A and 05B7894.



## ALLIS-CHALMERS

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## **Thermoid Conveyor Belting ...pays on the long haul!**

Here's belting with real stamina! Belt carcass and cover are welded together by Thermoid's exclusive impregnation process. With Thermoid's specially woven, finest quality reinforcement it troughs easily, withstands shock loading as no ordinary belt can—yet it is flexible enough to avoid internal heat build-up. The results of this unusual combination are years and years of trouble-free service on the toughest jobs.

There's a Thermoid Conveyor Belt made expressly for your materials handling requirements. For example: *Thermoid HT* for extremely abrasive materials such as quartz ores, trap rock and coal . . . *Thermoid A* for highly abrasive materials such as slag, lime, rock, ore, ashes, hot cement and crushed stone . . . *Thermoid C* for moderate abrasives such as sand, loam, gravel.

Your Thermoid distributor will help you select the conveyor belt that's exactly right for your needs.

Cut costs with  
Thermoid Multi V-Bolts . . .

... and Thermoid Hose.




# **Thermoid**

Thermoid Company • Trenton, N.J.



Roebling  
Royal Blue Wire Rope  
will take **shock**  
after **shock** after **shock!**

This, and the fact that Royal Blue is stronger than the strongest you have been using, has helped to make it the most widely favored rope in Roebling's history. It will work hard and last longer on *your* job. Your distributor or Roebling Sales Office will give you full information, or write: John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

**ROEBLING** 

Distributors, Branches and Warehouses Throughout the Country  
Subsidiary of The Colorado Fuel and Iron Corporation

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# MANUFACTURERS

## NEWS



**R. E. Stewart made officer**

**Western Precipitation Corp.**, Los Angeles, Calif., announces the election of R. E. Stewart as a vice-president of the corporation. Mr. Stewart, a chemical engineering graduate of the Cooper-Union School of Engineering in New York, joined the company in 1946. In 1955 he assumed the position of sales manager of the precipitator sales division.

**Alloy Casting Institute** at its annual meeting held in Hot Springs, Va., celebrated the 25th anniversary of continuous metallurgical research activity. At the close of the meeting, new officers were elected. F. M. Fahrenwald, president of the Fahlralloy Co., Harvey, Ill., was elected president of the Alloy Casting Institute, succeeding Bradley B. Evans, retiring president. Elected to the office of vice-president was Paul L. McCulloch, Jr., president of the Electro-Alloys Division of the American Brake Shoe Co. E. A. Schoefer was re-elected executive vice-president and treasurer of the Institute. Frank Kiper and J. B. Dear were named to the board of directors.

**Mexico Refractories Co.**, Mexico, Mo., announces that Morris S. Lindsey has been appointed sales manager of the Mexico Refractories Co. of Texas, successors to Royall Fire Brick & Supply Co., with district offices and warehouses in Houston and Dallas. Mr. Lindsey will cover the major portion of Texas except the Panhandle.

**Allis-Chalmers Mfg. Company**, Milwaukee, Wis., has appointed Norton E. Croft, former supervisor of crushing machinery sales in the processing machinery department, as Pacific regional representative to industries using processing machinery department products. W. F. Hackett, with Allis-Chalmers since 1949, has been named supervisor, crushing machinery sales, succeeding Mr. Croft. Another appointment was that of Elmer C. Mertz, as supervisor of pyro-processing machinery sales, succeeding William H. Tock who resigned.

**Westinghouse Air Brake Co.**, Milwaukee, Wis., has named Donald M. McDowell manager of engineering for the Le Roi division. Mr. McDowell, a graduate of Iowa State College, Ames, Iowa, joined Le Roi as chief development engineer in June of 1956.

**United States Rubber Co.**, New York, N.Y., announces the appointment of William R. Tiese as western belting engineer for the conveyor and elevator belting department. Mr. Tiese, a graduate of Virginia Polytechnic Institute, Blacksburg, Va., will combine technical sales and engineering service in the eleven western states.

**The White Motor Co.**, Cleveland, Ohio, has announced the purchase of the assets of Reo Motors, Inc., Lansing, Mich. Robert F. Black, chairman of the board and chief executive officer of White Motor Co., states that the acquisition of Reo was a logical step in White's expansion program aimed at broadening its markets. The White Motor Co. will operate Reo as a division under the direction of John C. Tooker who will be general manager of this division.

### Administrative changes at Davey Compressor Co.



**Paul H. Davey, Jr.**



**J. T. Myers**



**Paul Davey, Sr.**

**Davey Compressor Co.**, Kent, Ohio, has announced that Paul H. Davey, Jr., formerly vice-president in charge of production, has been appointed to succeed Mr. Paul H. Davey, Sr. as president of Davey Compressor Co. Paul H. Davey, Jr., a graduate of Yale University, New Haven, Conn., where he majored in business administration and mechanical engineering, joined Davey Compressor Co. in 1945.

Paul H. Davey, Sr., company founder and president since 1929, was elected to the newly created position of chairman of the board of both Davey Compressor Co. and Davey International, Inc. Mr. Davey is credited with invention of the first air cooled portable compressor. He holds 55 patents

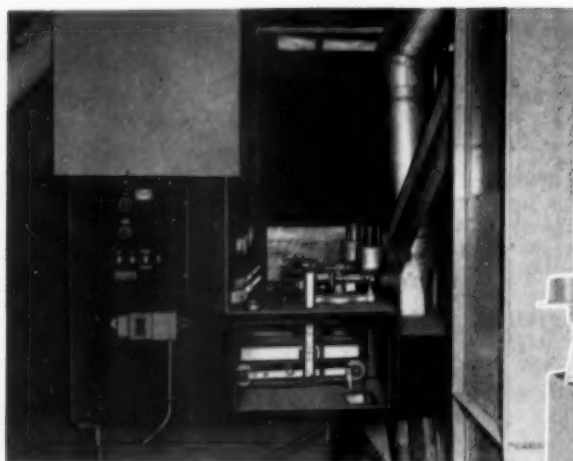
in the compressed air and automotive fields, including the Davey heavy-duty power-take-off.

New president and treasurer of Davey International, Inc., and general manager of Davey Compressor Co., is J. T. Myers, previously vice-president in charge of sales. In his new position, Mr. Myers, who has been affiliated with Davey since 1941, will be in charge of all Davey operations.

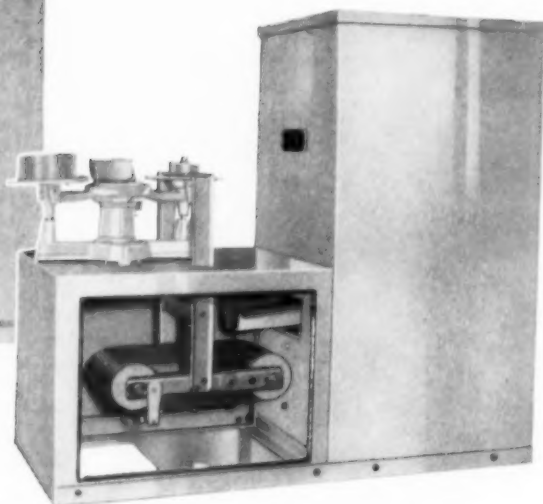
Another announcement was the appointment of John J. Kloskoski as general service manager of Davey Compressor Co. Mr. Kloskoski, a graduate of Kent State University, Kent, Ohio, joined the Davey organization in 1945.

*(Continued on page 231)*

**ELECTRONIC CONTROL**—the most accurate, continuous weigh control yet developed



**SYNTRON**  
"WEIGH-FLOW"



## GRAVIMETRIC FEEDERS

*for accurate continuous flow feeding by weight*

The weigh feeding of bulk materials at accurate rates will increase the capacity and efficiency of mixers, dryers, and other processing equipment and improve the uniform quality of the end product.

The Syntron "Weigh-Flow" Gravimetric Feeders are the most accurate and most dependable weigh feeding equipment available. Fully automatic, the rate of feed is controlled electrically by the load on a scale—suspended, constant speed conveyor belt. The scale

automatically corrects any variation in load on belt to any accuracy possible only with Electronic weigh control.

Syntron Weigh Feeders are built for long continuous, trouble-free service. They are simple, and functional in design keeping moving parts at a minimum. This means low cost maintenance. Syntron Gravimetric Feeders are available in a standard range of styles and sizes with capacities from ounces to 110 tons per hour.

**Builders of Quality Equipment for more than a Quarter-Century.**

### Other SYNTRON Equipment of proven Dependable Quality

**VIBRATING  
SCREENS**



**TEST SIEVE  
SHAKERS**



**VIBRATORY  
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**AC TO DC POWER  
CONVERSION UNITS**



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**SYNTRON COMPANY**  
450 Lexington Ave.      Homer City, Penna.

## MANUFACTURERS NEWS

(Continued from page 245)

**The Coe Mfg. Co.,** Painesville, Ohio, announces that F. W. Milbourn, Jr., succeeds his father, F. W. Milbourn, Sr., who recently passed away, as president and senior executive officer of the company. Mr. Milbourn, Jr., has been associated with the company for 23 years, and for the past 10 years has been vice-president and general manager.

Other new officers were also elected. E. P. Morris was named vice-president and sales manager, having been head of the company's general sales activity for the past 20 years. A newly appointed vice-president is Arthur S. Holden, Jr., who has been connected with the company for 20 years. F. S. Krag retains his position as a vice-president and director of the New York office.

**Fairbanks, Morse & Co.,** Chicago, Ill., recently announced the election of Robert H. Morse, Jr., as president and chief executive officer, and the re-assignment of three vice-presidents and the promotion of two other executives. New assignments are: Robert H. Morse, III, vice-president in charge of budgets and planning, a new section of the company; V. H. Peterson, vice-president in charge of sales; John A. Cuneo, vice-president in charge of foreign operations. John C. Elmburg was promoted to general sales manager, and G. R. Anderson was promoted to chief engineer.

**The Foxboro Co.,** Foxboro, Mass., announces the sudden death on June 3 of Irving W. Reynolds, vice-president of the company. He was 77 years old. Mr. Reynolds joined the company in 1908, the year it was founded. He was a graduate of Highland Military Academy, Worcester, Mass., and Massachusetts Institute of Technology, Cambridge, Mass.

**Dorr-Oliver Inc.,** Stamford, Conn., announces that Anthony Anable has rejoined the staff of the company as manager of the technical data division. Mr. Anable has been a member of Dorr-Oliver in various capacities ever since graduating as a chemical and metallurgical engineer from the Massachusetts Institute of Technology, Cambridge, Mass., except for a year and a half period beginning in August 1955. Prior to his return he was, for the past few months, retained as a consultant to the company in connection with completion of a training program for new personnel.

(Continued on next page)



## Moves a million-ton mountain of coal a year!

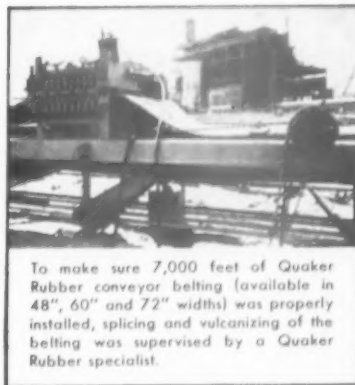
*One of the largest in the U. S., this system depends on over 7,000 feet of Quaker Rubber belting to keep the coal moving.*

**PROBLEM:** The Detroit Edison Company needed three separate conveyor systems to carry coal into their River Rouge power plant: (1) dock to storage, (2) dock to breakers to plant, (3) storage to breakers to plant.

**SOLUTION:** Quaker engineers and the Quaker distributor's men, working with engineers of the power plant, suggested the use of a belting designed for high lifts and long center distances. Over 7,000 feet was installed.

**RESULT:** The three conveyor systems work smoothly and efficiently, carrying coal into the plant at the rate of one million tons a year.

**YOUR PROBLEM:** Whatever your conveyor needs, whatever your industry—there's a Quaker Rubber Belt (or Hose) of the right construction to handle the



To make sure 7,000 feet of Quaker Rubber conveyor belting (available in 48", 60" and 72" widths) was properly installed, splicing and vulcanizing of the belting was supervised by a Quaker Rubber specialist.

job safely and economically. Quaker engineering service is available for the asking.

For your free brochure on conveyor belting, write your nearby Quaker Rubber distributor, or:

H. K. Porter Company, Inc.,  
Quaker Rubber Works,  
Philadelphia 24, Pa., or  
Pioneer Works, Pittsburg, Calif.

**QUAKER RUBBER DIVISION**  
**H. K. PORTER COMPANY, INC.**

ROCK PRODUCTS, August, 1957

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## MANUFACTURERS NEWS

(Continued from page 247)

### G. H. Olson retires



Link-Belt Co., Chicago, Ill., announces that G. H. Olson, a vice-president and a director of Link-Belt Speeder Corp. of Cedar Rapids, Iowa, subsidiary of Link-Belt Co., retired on July 1, after 47 years of service. Throughout his career, Mr. Olson has been actively associated with most of

the trade associations dealing with cranes and shovels. Shortly after the present Power Crane and Shovel Association was organized in 1945, he became its president.

**Diamond Iron Works Division,** Goodman Manufacturing Co., announces that John A. Nagle, district sales manager, passed away June 1. Mr. Nagle, a graduate engineer of Tulane University, New Orleans, La., had been with the Diamond sales staff since 1940.

**Cooper-Bessemer Corp.,** Mount Vernon, Ohio, has announced the appointment of R. F. Lay to vice-president and assistant general manager. Mr. Lay, a graduate of the University of Cincinnati, will now be directly responsible for coordinating the operating groups of the company. Grant Woodard was appointed general sales manager of the company. Mr. Woodard, in his new position, will be responsible for Cooper-Bessemer field sales activities within the United States as well as direction of the home office sales group.

**Joy Manufacturing Co.,** Pittsburgh, Pa., announces that Oliver J. Neslage, 64, vice-president, commercial sales, passed away at his home June 19,

1957. Mr. Neslage, a graduate of the University of Illinois, Urbana, Ill., was a key figure in the vast expansion program Joy Manufacturing Co. has been undergoing since World War II.

### Public relations director



**The Eimco Corp.,** Salt Lake City, Utah, has announced the appointment of Melvin K. Jennings as director of public relations for Eimco and its subsidiary units in Salt Lake City.

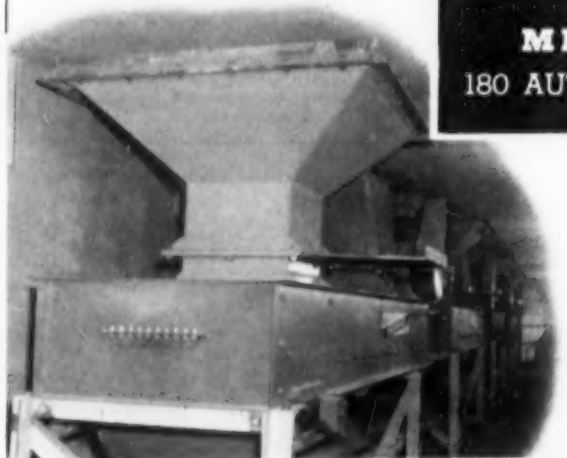
END

## ... ACCURATE CONTINUOUS BLENDING AND PROPORTIONING BY WEIGHT

... automatic weighing of any materials conveyed by belt

WRITE  
FOR  
DETAILS

**MERRICK SCALE MFG. CO.**  
180 AUTUMN STREET • PASSAIC, NEW JERSEY



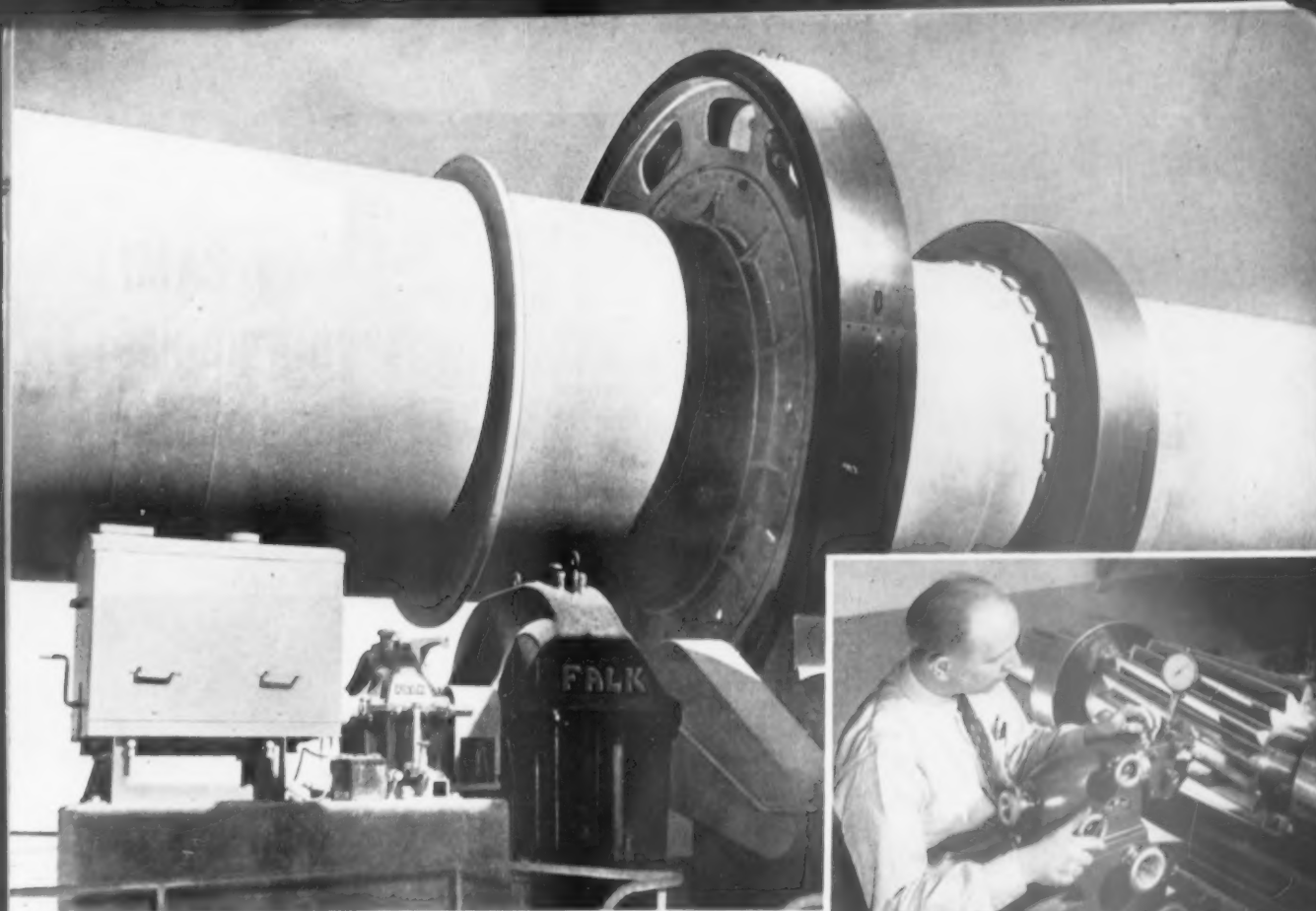
A battery of 4 FEEDOWEIGHTS feeding a blend of component materials to a collector belt.

Modern cement mills insist upon MERRICK FEEDOWEIGHTS to insure an accurate and uniform cement formulation. The ability of the FEEDOWEIGHT\* to continuously feed, blend and proportion—by WEIGHT—materials such as clinker, gypsum, limestone, etc. guarantees a finished cement that WILL meet the rigid specifications set up by the construction industry—repeat orders from cement manufacturers on five continents testify to these claims. Merrick also offers the WEIGHTOMETER\* to provide a daily production record of raw materials carried on belt conveyors.

Bulletins  
253 & 375  
covering the  
"FEEDOWEIGHT"  
and  
"WEIGHTOMETER"  
are available  
on request.

\*Reg. U.S. Pat. Off.





## Quick Quiz on Gear Costs

— plus some money-saving answers!

Here are some questions and answers of major importance to mill and kiln operators and engineers who want to keep costs down:

- Q. Are you losing production through "down time" caused by gear failures and frequent pinion replacements?
- A. Falk Helical Gears and Pinions, correctly engineered, precision-hobbed and of highest efficiency, keep operating year-in-and-year-out.
- Q. Do antiquated gears force you to use large, costly, slow-speed motors?
- A. Falk Helical Gears provide a single-mesh, high reduction ratio drive which permits use of higher-speed motors resulting in savings in power bills and space.
- Q. Is abrasion causing accelerated wear on your spur gears and shortening their life?
- A. Falk Helical Gears are specially designed and precision-built to give maximum resistance against abrasive wear.
- Q. Are gear teeth of outmoded design being taxed beyond their capacity?
- A. In Falk Helical Gears, with full depth profiles, several teeth share the load at all times, assuring long service life.
- Q. Is vibration, caused by inaccurate gearing, damaging associated equipment?
- A. Falk Helical Gears operate so smoothly that vibration resulting from tooth contacts is eliminated.

When expanding or modernizing your mill or kiln facilities, you can effect substantial long-range savings by specifying "Helical Gears by Falk," the nation's pioneer and largest supplier of precision, helical gearing.

Consult any Falk Representative—also, write for  
**Engineering Report 6170, "Advantages of Helical Gearing"**

**THE FALK CORPORATION, 3001 W. CANAL ST., MILWAUKEE 1, WIS.**

### MANUFACTURING TECHNIQUES THAT BENEFIT GEAR USERS

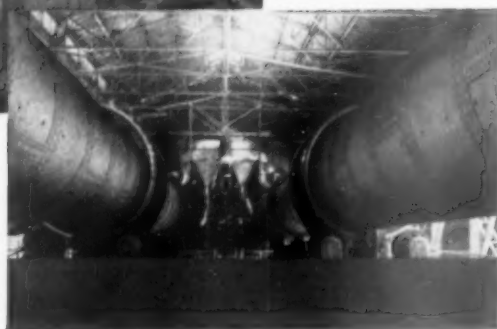
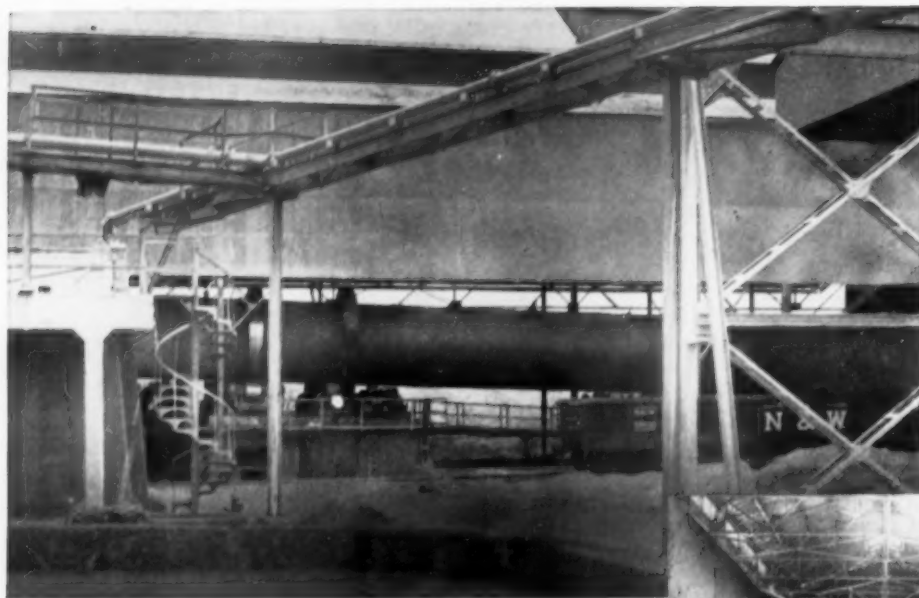
The manufacture of Falk Helical Gears and Pinions involves many unique and interesting techniques in foundry, machine shop, laboratory, gear cutting and other departments—including inspection.

A typical example of the extreme thoroughness of Falk methods is shown in the small photograph above. In the Falk gear laboratory, the correctness of tooth spacing on a mill pinion is determined by measuring the normal base pitch. Readings are taken completely around the pinion. Tooth-to-tooth spacing is generally within limits of .0002", and total accumulated spacing error averages only about .0005". These values are a natural consequence of the inherent accuracy of the machines and procedures employed.

Such techniques as this assure the gear user that he is receiving the utmost in quality in every Falk product.

# FALK

...a good name in industry



*added to this customer's facilities is*

## **ANOTHER VULCAN KILN...**

*our best testimonial*

This new kiln measures 10'x300' and this concern had VULCAN design and build it. WHY? Over 26 years ago VULCAN designed and built two other rotary kilns for the same concern, both measuring 10'x215', and these kilns have been operating efficiently and successfully ever since installation.

These are two good reasons for calling in VULCAN, but with the "New Look" at VULCAN, there are many, many more. Here are just a few:

- Recent installation of new machinery and equipment... an investment of over a quarter million dollars.
- Fully automatic circular and horizontal welding facilities.
- Newest production planning and inventory control systems.
- Top-flight engineers employing the latest engineering practices, fabrication by skilled craftsmen, both employing the most modern-day business concepts.

- All departments co-ordinated for efficient and complete follow-through on all work in progress.

VULCAN-designed and VULCAN-built equipment means good, dependable equipment. When you build or re-build contact VULCAN of Wilkes-Barre. VULCAN's facilities are the most modern in the field, insuring you of quick action to all inquiries in the beginning, to fast deliveries in the end. Write today... let us design and build your kiln. You too can enjoy years of trouble-free, dependable operation.

**Any information on items listed below  
will be sent to you immediately:**

- |                                     |                                 |
|-------------------------------------|---------------------------------|
| Rotary Kilns, Coolers<br>and Dryers | Vertical Lime Kilns             |
| Rotary Retorts,<br>Calciners, Etc.  | Briquetting Equipment           |
| Automatic Quick-Lime<br>Hydrators   | Cast-Steel Sheaves and<br>Gears |
|                                     | Steel Plate Fabrications        |

## **VULCAN IRON WORKS**

**WILKES-BARRE, PA., U.S.A.**

**CABLE ADDRESS  
"VULWORKS WILKESBARRE"**

**ESTABLISHED 1849**



## LIMAS give you rock-digging power matched to your job requirements



Lima Type 1201 Shovel, equipped with 32½-ft. boom, 22-ft. dipper handle, and a 3½-cu. yd. dipper, excavating rock in a quarry near Beverly, S. C.

From the smallest to the largest, you'll find that Limas are champions at high-output rock digging and loading. Smooth action, accurate load spotting, continuous trouble-free performance—that's the story on Limas all over the world. Built in sizes from ½ to 6 cu. yds., there is a LIMA matched to your job requirement.

Some of the quality features built into Limas: **air-controlled clutches** on the larger types for ease of control and instant response; **anti-friction bearings** in the drums and other critical parts to keep wear at a minimum and lessen



Lima Type 34 Paymaster Shovel, equipped with an 18-ft. boom, 15-ft. dipper handle, and ¾-cu. yd. dipper, excavating in a quarry near Leitchfield, Ky.



Lima Type 2400 Shovel, equipped with a 36-ft. boom, 24-ft. dipper handle and 6-cu. yd. dipper, excavating rock on St. Lawrence Seaway project.

lubrication problems; **dirt seals and retainers** in crawlers exclude abrasive materials; **torque converter** drive (optional) for greater power without stalling; **big-capacity drums** for longer cable life.

And, remember, wherever you are, you can depend on skilled service and nearby service stocks of parts to keep downtime at a minimum. See your Lima distributor for complete information about the machine best fitted to your needs . . . or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

**LIMA**

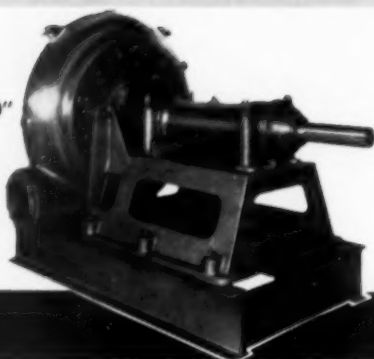
SHOVELS • CRANES  
DRAGLINES • PULLSHOVELS



**BALDWIN-LIMA-HAMILTON**  
Construction Equipment Division — LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation  
Hamilton • Lowry Hydrapress • Madsen • Pelton • Standard Steel Works

Model XL  
Built in  
6", 8" and 10"  
sizes.  
High Grade  
Anti-Friction  
Bearings  
throughout.



## Lightning DREDGE PUMP

For RIGIDITY while pump is in operation, shell is mounted direct to base by means of solid, one piece casting. For GREATER PRODUCTIVITY (10-15% higher solids output than comparable pumps), EASIER MAINTENANCE (impeller replaced in hours instead of days) and ECONOMY in first cost, replacement cost and operating cost look to LIGHTNING the complete line (3" to 10").

See your local distributor or write:

**KANSAS CITY HAY PRESS CO.**  
Manufacturers of Heavy Duty Lightning Sand and Gravel Pumps  
801 WOODSWETHER ROAD • KANSAS CITY, MISSOURI

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Auto - Vortex Classifiers are delivering sharp gradations and recovering fines . . . at lower operating costs . . . in hundreds of installations all over the country.

**CHARLES E. WOOD CO.**

**AUTO  
VORTEX CLASSIFIERS**

906 N. WATER ST. • MILWAUKEE 2, WIS.

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We'd like to  
solve your classification problem.  
Write today!

NOTIFY US OF CHANGE  
OF ADDRESS TO  
ASSURE PROMPT  
DELIVERY OF EACH  
ISSUE OF  
**ROCK PRODUCTS**

## WHERE TO BUY

### FOR SALE

USED QUARRY AND CRUSHING EQUIPMENT IN USE NOW AND CAN BE SEEN IN OPERATION. AVAILABLE ABOUT NOV. 1, 1957.

#### QUARRY EQUIPMENT

Sanderson Cyclone Drills  
Quarry Cars, 10 Ton  
# 92 Marion Steam Shovels  
Tracks

#### CRUSHER EQUIPMENT

50" Gyratory Crusher  
Pan Feeder  
# 13 Pennsylvania Hammer Mill  
Car Hoists and Car Dump Hoists  
Crusher Building  
36" Belt Conveyor complete  
24" Belt Conveyor less Belt  
Rotary Screens  
Screen Buildings  
Other Misc. Items.

**PITTSBURGH PLATE GLASS CO.**  
COLUMBIA CEMENT DIVISION  
Zanesville, Ohio

### KILNS—COOLERS—DRYERS

705-24 Link-Belt Roto Louvre  
705-20 Link-Belt Roto Louvre, SS  
502-16 Link-Belt Roto Louvre  
8' x 125' x 3/4"  
7' x 50' x 1/2"  
5' x 20' x 1/4" welded

### PULVERIZERS—MILLS

#### CRUSHERS

8' x 24" Hardinge Steel Lined 150 hp  
54" x 26" Allis Chalmers crushing rolls  
18" x 18" Jeffrey 1-roll spiked  
Raymond #1 Pulverizer  
3620 Dixie Non Clog Hammermill  
20" x 12" Jeffrey Hammer Style A, NEW  
15" x 8" Jeffrey Hammer Style B, NEW

#### OTHER ITEMS

Rotex #21, 40" x 84" Sifters  
Universal Roads 18" Cent. Separator  
47' Screw Conveyor, 12" 2 HP motor  
12" Merrick Weightometers

SEND US YOUR INQUIRIES

### HEAT & POWER CO., INC.

60 East 42nd St., New York 17, N.Y.  
MURRAY HILL 7-3380  
(MACHINERY & EQUIPMENT MERCHANTS)

LIMA 1201 Shovel new 1951, Cummins diesel  
\$27,500 Rental Purchase  
UNIVERSAL 2-Unit Portable Plant w/ 18x24 rb  
Jaw feeder, underconveyor, Cal 10800 diesel,  
on wheels. Secondary 30x18 rb. Double Roll  
vibr screen, rotator, Cal 10800 diesel. Good  
\$15,500 Rental Purchase.

ROGERS 2-Unit Portable Plant w/ 24x36 rb Jaw  
crusher, feeder, underconveyor GMC diesel,  
tandem rubber. Secondary 36x24 rb. Rolls, 4x12  
31"-deck vibr screen, rotator, 4-delivery  
conveyors, GMC diesel, tandem rubber. New  
1955, like new condition. Cost \$75,000 Our price  
\$45,000 Rental Purchase.

STATIONARY Plant w/ 24x36 roller brg. Jaw  
Crusher, excellent. \$4500

UNIVERSAL Portable Plant w/ 30x18 rb. Rolls,  
23 hammermill, 4x12 2-deck screen, rotator,  
30" belt system, diesel power, tandem rubber.  
Rebuilt \$14,500 Yard. Rental Purchase.

SYMONS 4' cone crusher, #4279, standard, re-  
built. \$11,000

CEDARAPIDS 30x22 rb. Double Roll Crusher,  
like new. \$3850

AUSTIN WESTERN 20x36 roller brg. Jaw Crusher,  
excellent. \$4500

AUSTIN WESTERN 4x40 roller brg. Jaw Crusher,  
good. \$1350 Yard

AUSTIN WESTERN 10x16 rb. Jaw Crusher,  
good. \$850 Columbus, Ohio

ROGERS 10x16 rb. Jaw Crusher, good. \$500

Yard

ROGERS 10x20 pb. Jaw Crusher, excellent. \$600

Yard

TELSMITH Ajax mdl. 60 Scrubber & Scalper,  
20' long, rebuilt. \$4350

CEDARAPIDS 3x8 Apron feeders, one w/ electric  
motor. \$900 each

TELSMITH 2x6 Apron Feeder, new plates. \$450

Yard

SIMPLICITY 4x12 2-deck Horizontal Screen, ex-  
cellent. \$2250 Yard

SIMPLICITY 4x8 3-deck mdl. D hvy duty screen,  
excellent. \$1650 Yard

EAGLE Twin Screw washer, 20"x15" screws. \$900

Yard

C-P Wagon Drill, mdl. 76, on rubber w/ air motor,  
rebuilt. \$850 Yard. Also Gardner, Denver

D99DT on rubber at \$800, Ingersoll Rand X71,  
rebuilt on rubber for \$800, Cleveland D14 on  
rubber, good. \$600

**Wenzel Machinery Co.**

565 S. 10th, Kansas City, Kans.



# BONDED EQUIPMENT BARGAINS

NEW CURRENT MODELS IMMEDIATE SHIPMENT FROM OUR FACTORY - WRITE, WIRE OR PHONE

## NEW BONDED® TROUGHING IDLER CONVEYOR BARGAINS



**BONDED®**  
8" Jr. I Beam  
Frame  
Conveyor

**BONDED®**  
Truss Frame  
Conveyors



Complete Pre-Fab sections of 8" Jr. I Beam or Truss Conveyors, quickly and easily joined together on the job. Both types of conveyors are equipped with 5" roll diam. idlers and return rolls, 20" diam head pulley and 16" diam tail pulley mounted on 2 1/4" or 2 1/2" diam. shaft. Bonded Truss Frame Conveyors are built like a bridge. Designed for long free spans to 50 feet. Constructed of structural angle and reinforced with steel plate. Special high-tensile bolts are used to join all sections. Prices listed are for I Beam Frame Construction. Prices of Truss Frame Conveyors quoted on request. We take our loss on our stock of short length belting. You can save as much as 50% on the BONDED CONVEYOR SPECIALS, with conveyor belting in two pieces. Belt is new 4-ply 28-oz. duck, 1/4" top rubber cover x 3/8" bottom cover and is fresh stock made by leading manufacturers.

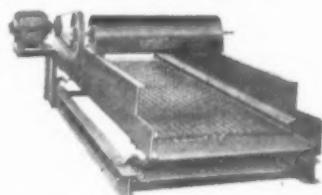
### CONVEYOR PRICES INCLUDE BELTING

Belt Width	Length of Conveyor	List Price	Sale Price	Belt Width	Length of Conveyor	List Price	Sale Price
14"	25'	\$1397	\$722	14"	50'	\$2232	\$1144
14"	85'	3377	1733	14"	125'	4697	2407
16"	25'	1262	636	16"	45'	2137	1088
16"	60'	2662	1359	16"	90'	3712	1900
18"	25'	1477	794	18"	45'	2217	1166
18"	70'	3142	1648	18"	85'	3697	1933
18"	100'	4252	2220	18"	130'	5362	2797
20"	25'	1517	828	20"	60'	2882	1531
20"	75'	3467	1838	20"	90'	4052	2145
24"	25'	1590	898	24"	45'	2430	1330
24"	70'	3480	1875	24"	100'	4740	2514
24"	120'	5580	2950	24"	150'	6840	3603
30"	50'	2911	1617	30"	70'	3871	2119
30"	90'	4831	2614	30"	140'	7231	3852
36"	25'	1818	1118	36"	45'	2585	1678
36"	60'	3638	2096	36"	100'	5118	3214

For conveyors longer or shorter than those listed above, add or deduct the following per foot prices according to belt width. Prices include belting.

For 14" belt, add \$16.84 per foot	For 16" belt, add \$18.04 per foot
For 18" belt, add \$19.24 per foot	For 20" belt, add \$20.37 per foot
For 24" belt, add \$21.78 per foot	For 30" belt, add \$24.75 per foot
For 36" belt, add \$27.95 per foot	Write for Bulletins #1138 and #1189

## NEW BONDED® GENERAL DUTY VIBRATING SCREENS



For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry.

**GENERAL DUTY SCREENS, TYPE AS:** Eccentric weight mechanism, spring mounted, 1 to 3 decks, 2' x 4' to 3' x 8'. Write for Bulletin No. 1086.

Priced from \$443.00

## NEW BONDED® HEAVY DUTY VIBRATING SCREENS



**HEAVY DUTY MODELS, TYPE BS:** Four bearing positive throw eccentric shafts; 3' x 6' to 5' x 14', 1 to 5 decks. Write for Bulletin No. 1097.

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## NEW BONDED® FEEDERS



For high tonnage and controlled feed of Aggregate, Sand, Gravel, Crushed Stone, Clay products, Metallic Ores, Coal, Cinders and almost any other bulk material to Crushers, Screens, Conveyors, Mills and other process machinery. All models available in abrasion resistant alloy steel plate. Capacities to 250 tons per hour. Write for Bull. #1140 & #1182.

Priced from \$275.00

## NEW BONDED BUCKET ELEVATORS

Open or Enclosed Vertical or Inclined Bucket Elevators with continuous or spaced buckets mounted on chain or belt. For small to medium size lumps, fine abrasive material such as dry sand, coke breeze, wet slag, many other bulk materials. Prices quoted on request. Write for Bull. #1017.

## BONDED CONVEYOR ACCESSORIES



Head & Tail  
\$149.00



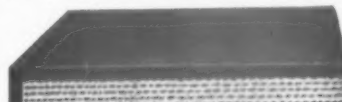
Wing Pulley  
\$71.00



Guide Idler  
\$14.50

## NEW CONVEYOR BELTING SAVE UP TO 25%

Heavy duty 4-ply, 28 oz. duck 1/4" top rubber cover by 3/8" bottom cover 12# to 15# average friction pull; 800# to 1000# average cover tensile rubber belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stock.



Width	Ply	List Price	Sale Price
14"	4	\$3.52 foot	\$2.83 foot
16"	4	3.96 foot	2.97 foot
18"	4	4.38 foot	3.29 foot
20"	4	4.83 foot	3.80 foot
24"	4	5.68 foot	4.26 foot
30"	4	6.97 foot	5.21 foot
36"	4	8.26 foot	6.18 foot

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, 1/4" top rubber cover x 3/8" bottom rubber cover, 16# to 19# average friction pull, 2500# to 3000# average cover tensile belting. This belt is for more severe service, high tonnage and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal and other similar materials, both wet and dry. Belt has molded rubber edge.

Width	Ply	List Price	Sale Price
16"	4	\$4.71 foot	\$3.46 foot
18"	4	5.23 foot	3.83 foot
20"	4	5.73 foot	4.37 foot
24"	4	6.74 foot	4.94 foot
30"	4	8.28 foot	6.07 foot
24"	5	7.90 foot	5.78 foot

The following belts are 5-ply, 32 oz. duck:

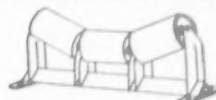
Width	Top Cover	Bottom Cover	List Price	Sale Price
24"	1/4"	3/8"	\$ 8.56 Ft.	\$ 6.42 Ft.
30"	1/4"	3/8"	10.52 Ft.	7.89 Ft.
36"	1/4"	3/8"	14.21 Ft.	10.66 Ft.

A heavier duty 28 oz. duck belt with 1/4" top rubber cover x 3/8" bottom rubber cover having 3500# to 4000# average cover tensile, 20# to 24# average friction pull. For the higher abrasion resistance applications and handling of materials where more strength is required to give greater belt life.

Width	Ply	List Price	Sale Price
18"	4	\$5.67 foot	\$4.20 foot
20"	4	6.22 foot	4.61 foot
24"	4	7.32 foot	5.41 foot
24"	5	8.53 foot	6.31 foot

Other widths, plies, duck weights and cover thicknesses available at low prices. Write for Free Sample.

## NEW IDLERS AND RETURN ROLLS 25% BELOW LIST PRICE



3-roll, 5" diameter Troughing Idlers for:

14" belt	\$18.50	24" belt	\$21.25
16" belt	19.25	30" belt	22.00
18" belt	20.50	36" belt	22.75
20" belt	20.75	48" belt	25.50

1-roll, 5" diameter Return Idlers for:

14" belt	\$7.25	24" belt	\$ 8.50
16" belt	7.50	30" belt	8.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

All steel. Interchangeable with other well-known makes. Furnished with easily replaceable pre-lubricated sealed ball bearings. Also can be furnished with greaseable type Alemite Fitted bearings at slight additional cost. Maintenance is negligible. Bonded Rubber Disc Impact Idlers priced from \$61.00. Write for Bulletin #1138.

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Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders

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## LIQUIDATION

- 1—Allis-Chalmers 7' x 24' Two-Compartment Compeb Mill with 500 HP motor.
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- 2—Vulcan 7'6" x 6'6" x 120' Rotary Kilns, 3/4" shell.
- 2—Bartlett & Snow 7' x 30', 6' x 30' direct heat Rotary Dryers complete with feeders, blowers, motors, 304 S.S. Clad 17' from feed end.
- 1—Raymond 16' dia. single whizzer Mechanical Air Separator with 50 HP motor.
- 2—Tyler Hummer 3' x 15', Type 38 single deck Screens with Thermionic Units.
- 1—Link Belt totally enclosed Bucket Elevator 51' centers, 14" x 7" buckets, motor driven.
- 150' Screw Conveyor 14" and 18" dia. with steel troughs and covers.
- 1—Rectangular Two-Compartment Bin 22' 8" long x 20'6" wide x 18' deep.

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## CRANES & SHOVELS

Bantam "M-49" 3/4 yd. Hoe, mounted Chevrolet Tandem Truck.  
Marion "331" 3/4 yd. Shovel or Dragline.  
Byers "83" 3/4 yd. Crane or Dragline.  
Inaley "K-12" 1/2 yd. Trench Hoe, Crane or Dragline. (2).  
Link-Belt Shovel Attachment complete for L-55B (1/2 yd.)

## LOADERS

Pettibone "10" Used 1-Yd. Tractor-Shovel, Gas, 3 yrs. old.  
Caterpillar "D-6" Used Diesel Tractor w/Trackson Hyd. Front End Loader. Rebuilt engine & tracks.  
Caterpillar "D-6" Diesel Tractor w/Hi-Lift Cable Traxavator, 1959 model in fine shape.  
Harber-Greene "545W" Used Rubber-Tired Loader.  
Allis-Chalmers "HD-5G" Used Diesel Tractor w/Tractomotive Front End Loader. Rebuilt engine & Tracks.  
Michigan "125A" Used 2 1/4 yd. Diesel Tractor-Shovel, 2 1/2 years old.

## MISCELLANEOUS

Gruendler "1024" Roller Bearing Jaw Crusher.  
Parsons "21" Ladder-Type Crawler-Mounted Trimming Machine, digs 9' deep.  
Pettibone-Wood "820A" New Windrow Proportioner. Reduced for quick sale.  
Pettibone-Wood "P620" Used Preparerizer, G-M Power, Diesel. Will rent or sell.  
Hayport 23 Yd. New Aggregate Bins.  
Rex 3 Yd. Used Hi-Discharge Moto-Mixer (1/4 yd. Agitator) Mounted I-H "L170" Tandem.  
Jaeger 3 Yd. (4 1/4 yd. Agitator) Hi-Discharge Mixer, 1945 model, mounted on 6-wheeler. Cheap.

NOTE: This Equipment Located in Our Yard.

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### For Prompt Shipment SUBJECT TO PRIOR SALE

New Gruendler Crushers  
New 14 x 24 Roller Bearing Jaw Crusher  
New 30 x 18 Heavy Duty Gear-Type  
Double Roll Crushers

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CLASSIFIER—Durr 26' bowl,  
10 tons per hour.  
COLLECTOR—Duron Wet Type,  
10,000 CFM capacity.  
PAN CONVEYORS—24' x 18"—  
30" x 23"—36" x 54"  
ELEVATOR—Open Inclined 90'  
centers with 15 x 14" buckets  
GRIZZLY ROLLERS—Frame contains 6  
12" dia x 36" ribbed live rollers.  
HAMMERMILL—Penna. S-6  
SAND DRAG—Telamith 36' x 25'  
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SEPARATOR—Dings Magnetic  
Crosheft—220 volt  
MOTORS—25 AC Induction  
3 to 75 HP-110/240

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Plymouth Meeting, Pa.

## JAW CRUSHERS

60"x48" to 6"x3"

New and used RELIABLE



"Farrel-Bacon"  
Jaw Crushers

BACON-PIETSCH CO., INC.

26 Park St., Montclair, N. J.  
29 Washington Ave., Hamden, Conn.

DRYERS—1430, 5421, 5440, 6400, 10478  
CRUSHERS—615, 1016, 1021, 1030, 1036, 1040,  
1046, 1048, 1830, 1836, 2036, 2436, 2540, 3042,  
3047, 4036, 4042, 8066 JAW—37 1/2, 38 1/2, Re-  
nedy, 13H, 16A, 30" Telamith, 16", 30", 36"  
McClell 24" 3" Traylor GYR 2 3 4 CONES  
PLANTS—Diamond 65, CR Master Super tandem,  
Lippmann 2436, Grizzly King AWW  
MILLS—45x16, 67x20 Ball, 2272, 4032 CR Ham-  
mer 1 1/2 Tractor 3042 CR Import  
CONVEYORS—19x58, 30x51, 42x100, 54, 1 1/2,  
2 & 2 1/2 yd. SAUERMANNS Nobel C475 Batch  
Plant  
WASHERS—Eagle 22x26, 20x20, 15x21, 24x18, 20x  
14, 20  
FEEDERS—2x1, 2x1 1/2 Apron, Others: 12, 14,  
16 AIR SEPARATORS  
SHOVELS & DRAG—Lorain 41, 75, 80, 100, 820,  
Link 41, 802, 1201, 2400, SWS, 6, 7, 801 & 95,  
Link Belt 1850, 85, 300, 505, Bucyrus TW, 27H,  
29H, 30H, 14H, 15H, 80H, PAH 455, 1055,  
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Special: Pioneer conveyor, 30" width, with gravity belt tightener, 200' long.  
Hopto 120 on IH truck  
2 yd. Dumpster  
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This equipment rebuilt in our modern plant by expert mechanics. Come see it!  
10002 Southwest Highway TRACTOR & EQUIPMENT CO. Oak Lawn, Ill.

## WANTED

Good Used 18" & 24" Trough Idlers, any amount.  
Late Model Vibrating Screens.  
Jaw Crushers, all sizes.  
Gearmotors 3 to 15 H.P.

## FOR SALE

DIAMOND PORTABLE CRUSHING PLANT, 15 x 24, PNEUMATICS.  
CEDAR RAPIDS 25 YD. SECONDARY PORTABLE CRUSHING PLANT.  
Acme 9" x 16" Jaw Crusher.  
Acme 14" x 20" Jaw Crusher.  
Climax 10 x 20" Jaw Crusher.  
New Universal 3 x 5 s.d. Screens (2)  
New Universal 3x 8 s.d. Screen  
New Universal 3 1/2 x 8 s.d. Screen  
Seco Screen 4' x 8' double deck.  
Seco Screen 4' x 14' triple deck.  
Revolv. Screen 48" x 20", trunnions.  
6" Enclosed Bucket Elevator.  
8" Enclosed Bucket Elevator.  
75' x 10" Enclosed Elevator.  
6" Encl. Perfect Discharge Elevator.  
Sandvik Steel Conveyor 30" x 45" with idlers and pulley.  
12" x 30" Screw Conveyor.  
Trough Idlers 42" & 48", antifriction.  
Trough Idlers 36", 5 roll type (69).  
New Idlers, 18" and 24".  
Plain Bearing Trough Idlers, 5 roll type, 18" and 24".  
Misc. Size Large Conveyor Pulleys.  
Eriez Perm. Magnetic Pulley 20" x 20".  
Jeffrey 35 Cu. Yd. Bin.  
15 Ton Stiffleg Derrick, 110' Boom.  
Wright 8 Ton Chain Hoist.  
Sullivan Elec. Tugger Hoist, 7 1/2 H.P.  
Small Gasoline Water Pumps.

G. A. UNVERZAGT & SONS INC.  
136 Coit St., Irvington 11, N.J.

## FOR SALE BY OWNER

1 Motor, electric 40/20/27 H.P. Allis-Chalmers, three speed, 1740/870/1150 R.P.M. open type, 3 phase, 60 cycle, 440 volt.  
1 Motor, electric, 10 H.P., G.E. 1160 R.P.M., 220 volt, 3 phase, 60 cycle, double extended shaft.  
1 Motor, electric, 40 H.P. Allis-Chalmers, 865 R.P.M., 3 phase, 60 cycle, 440 volt, slip ring open type.  
2 Locomotives, 8 and 12 ton, 36" gauge Ply-mouth.  
1 Bucket, 1 1/4 yard capacity for Lull Shovel Loader.  
1 Screen 3' by 10' single deck, Allis Chalmers low head.

For further information contact J. H. Clements,  
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Available throughout the U.S.—Items you need may be available near you. Your inquiries would be appreciated.

Buildings	Draglines	Loaders	Pavers
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Sauerman R. B. 3-drum drag Scraper Hoist, without power—\$2500.00. Also offer some new spare parts.

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LOW COST—DEPENDABLE  
INDUSTRIAL RUBBER PRODUCTS**



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PRODUCTS

#### ROTARY DRYER FOR SALE

- Rotary Dryer 9' x 50' x 1/2" thick, new roller bearings \$12,000
- Allis-Chalmers 200 HP Slip ring motor, 60 cycle 3 phase, 1300 rpm, 440 V, 260 amps \$3,000
  - 1 automatic electric starter Type I, 3 phase 60 cycle, 440 V form 2
  - 1 safety switch series 3, 400 amps, 575 AC Volts
  - 1 electric manual control lock, A-B, 200 HP, SEC. amps 146, Sec. volts 600
  - 9 resistance block, type cast-grid, class 93, Sec. amps 146, Sec. volts 600
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**AGGREGATE BATCHING PLANT:** 200 ton Bin, 1200 bbl. Cement Bin, Bucket Elevator, Cement Screw, 4 Beam Scale, etc.

**COMPRESSORS:** 2 Sullivan angle compound, 22 x 13 x 14, 400 H.P., 212 RPM, capacity 1573 CFM, 100 lbs., complete with all auxiliary equipment.

**BELT CONVEYOR:** 60" wide, 170 ft. cc, complete with all mechanical parts, thoroughly modern, with supporting structure, excellent condition.

**WAGON DRILLS:** Gardner Denver, Ingersoll Rand, all modern.

**LOCOMOTIVES:** Diesel Electric, standard gauge, one 25 ton and one 80 ton.

**PUMPS:** 2 5 stage, 450 H.P., submersible, capacity 3000 GPM @ 500' head. 2-150 H.P., 1000 GPM @ 500' head.

**SHOVEL, DIESEL:** P&H 955 combination shovel & dragline, 2 yd. capacity.

**DRAGLINES:** One Monaghan 7-W, full electric, with 7 and 8 yd. buckets, Ward Leonard control, Bucyrus Erie 54-B and 120-B Marion 151-M.

**TRUCK CRANE:** Lorain T20 complete with crane boom, shovel front and backhoe.

**OVERHEAD ELECTRIC TRAVELING CRANES:** Two 25 ton, 56' span, one 10 ton and one 20 ton, 56' span, one 6 ton, 79' span; cage control, 230 volt, D.C.

**CLAM SHELL BUCKET:** Williams 1 1/4 yd. capacity, excellent condition.

**MINE HOISTS:** Double clutched drums 16' dia., 16' face, 1 1/2" rope, 1000 FPM, post brakes, 1250 H.P., 3 phase, 60 cycle, 2200 volts, complete with controls. One double drum 12' dia., 30,000# single line pull, 1500 H.P., 1200 FPM.

**MOTOR:** G.E. 50 H.P., 2200 volts, 3 phase, 60 cycle 450 RPM, with control equipment.

**PULVERIZERS:** Hardinge Conical 8' x 48", Allis Chalmers 7' x 25 ft., both with motors and control.

**DRYERS & KILNS:** 48" dia., 21 ft. long dryer complete with all auxiliary equipment. Rotary Kilo 9' x 134 ft. with large quantity new spare parts.

**JAW CRUSHERS:** 10 x 15, 10 x 20, 12 x 24, 15 x 36, 18 x 36, 24 x 36, 25 x 40, 30 x 42, 40 x 42, 42 x 48.

**GRATORY & REDUCTION CRUSHERS:** All sizes.

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#### QUARRY EQUIPMENT

Cedarapids 2540 jaw only. Rebuilt.  
Cedarapids 1836 twin jaw crusher. Good.  
Cedarapids 936 Jaw Crusher.  
Cedarapids 3042 Double Impeller Rebuilt.  
Teismitz 24" cone crusher. Good.  
New Holland 3020 Roll Crusher. Rebuilt.  
12"x35" inclined open elevator. New.  
Cedarapids 4' x 14 double deck screen.  
Cedarapids 4' x 12 double deck screen. Also AG type.  
New Holland 4' x 12 double deck screen.  
Pioneer 4' x 8 double deck screen.  
2 1/2 ton, single-compartment 8' x 12' bin.  
60-ton, two-compartment, 8' x 18 storage bin with clam gates.  
100-ton, two-compartment, 13' x 23' bin.  
Special bins to your specifications.  
Conveyors—18" 24" 30"—36". Also conveyor belting.

#### SHOVELS AND CRANES

Lorain 82, 2-yard diesel shovel.  
Bucyrus-Erie 300, 1 1/2-yard diesel dragline.  
Lorain L30K 6 1/4-yard diesel crane-bow.  
General 3/4-yard gasoline crane-shovel-bow.  
Link Belt L25-80 3/4-yard diesel shovel-drag.  
Link 34 Paymaster 3/4-yard diesel shovel. Good.  
Unit 1020 3/4-yard diesel powered shovel-crane.  
Lorain L-26 3/4-yard diesel powered clamshell.  
Lorain L-40 3/4-yard diesel clam-drag shovel.  
Lorain TL-20 diesel powered backhoe.  
Hosley K-12 1/2-yard gasoline powered backhoe.  
Link Belt L25-50 backhoe, gas power.  
Lorain MC-504-W crane clam. Reconditioned.  
Lorain SP-110 self-propelled crane.  
Michigan T6-K Truck Crane 35' boom.

#### TRACTORS, TRUCKS, SCRAPERS, ETC.

- Euclid 7-yard overhung engine scraper.
- Mack L105 15-ton rear dump.
- Euclid LTD 10-ton rear dump.
- Euclid 13-yard bottom dump.
- Euclid tractors with 2300 gallon water tank semi-trailer.
- Pullman 5-600 6 to 8 yard scrapers.
- Caterpillar DW-10 scraper.
- Cletrac OC3-42 tractor with front loader.
- Caterpillar DW-10 with Alcoa side dump.
- Allis Chalmers HD-10 tractor with hydraulic bulldozer blade.
- International TDH crawler tractor.
- International TD-10A tractor with PCT.
- International TD18 with Bucyrus-Erie bulldozer blade. Excellent condition.
- Caterpillar D-7 with cable bulldozer blade.
- Caterpillar D-8 with cable bulldozer blade.
- Austin Western diesel powered grader.
- Adams diesel powered grader.

#### SHOVEL ATTACHMENTS

Lorain 820, 2 yd. 21 boom, 21 stick.  
Lorain 50, 1 yd. 21 boom, 11 stick.  
Lorain 40, 3/4 yd. 19 boom, 16 stick.  
Lorain 30A, 1/2 yd. 16 boom, 12 1/4 stick.  
Osgood 903, 2 yd. 34 boom, 26 stick.  
Hay City 45, 3/4 yd. 19 boom, 14 stick.

#### BACKHOE ATTACHMENTS

Lorain 50, 19' boom, 7' stick, 48" bucket.  
Lorain 40A, 18' boom, 7' stick, 28", 36" or 44" bucket.  
Lorain 15, 14' boom, 5' stick, 24" bucket.  
Koehring 304, 19' 10" boom, 3' 6" stick, 38" bucket.

#### DIESEL POWER UNITS

Cal D7700 74 HP at 1000 RPM Rebuilt.  
Cal D13000 145 HP at 1000 RPM Rebuilt.  
GMC Twin Diesel, rebuilt.  
GMC 3621C, 3-cylinder, new.

#### ASPHALT PLANT

Barber-Greene 848 Model with drier, gradation unit, etc.

#### AIR COMPRESSORS

105 cu. ft. Ingersoll-Rand gas portable.  
500 cu. ft. Gardner-Denver diesel portable.  
500 cu. ft. Ingersoll-Rand Waukesha power.  
600 cu. ft. Gardner-Denver diesel portable.  
420 cu. ft. Gardner-Denver two-stage stationary Rebuilt.

#### L. B. SMITH, INC.

Camp Hill, Pa.  
Phone Harrisburg REgent 7-3431

**ROTARY DRYERS & KILNS:** 6' x 60', 4'6" x 40', 4'6" x 32', 8' x 15', 3' x 24'.  
**ROTARY COOLERS:** 104" x 30', 104" x 70'. Submerged Type.  
**WORTHINGTON AIR COMPRESSOR** Type YH2, 11 x 7 x 7, 75 HP.  
**HARDINGE CONICAL MILL** 10' dia. x 96", 4'6" dia. x 16".  
**PATTERSON BALL TUBE MILL** 6' x 22', 200 HP UNUSED.  
**AL. CR. 6' x 16' BALL TUBE MILL** 30 HP.

WE WILL PAY CASH FOR  
GOOD USED EQUIPMENT

#### PERRY EQUIPMENT CORP.

1418 N. 6th St. Philadelphia 22, Pa.  
POplar 3-3505

**SPECIAL CRUSHING-GRINDING PLANT**  
Hardinge ball mill 8'x30" 100 HP AC motor complete, spare new liners available  
Hardinge ball mill 8'x30" 200 HP AC motor Falk reduction gear, 15 tons balls  
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Pennsylvania HXT-18 hammermill 850 HP 900 RPM spm. motor, extra new shaft, discs, many spare parts. Motor rewound, price now condition  
2 W. B. Tyler Hammer screens 4'x10' two deck Jeffrey vibrating feeders 3 12'x30" 8 18'x30"  
Two bucket elevators 58" high 14"x18"x1/2" buckets  
Tilted bucket stowage elevator 120' long 14"x18"x1/2" buckets; 24'x7'6" steel housing  
3 Williams Mdl 278 hammermill, V-belt drive.

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50 Jaeger, Rex Smith 3 to 8 yd. high discharge, horizontal, truck mounted as is or remanufactured

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1528, 1540, 1552, 1564, 1576, 1588, 1600, 1612, 1624, 1636, 1648, 1660, 1672, 1684, 1696, 1708, 1720, 1732, 1744, 1756, 1768, 1780, 1792, 1804, 1816, 1828, 1840, 1852, 1864, 1876, 1888, 1900, 1912, 1924, 1936, 1948, 1960, 1972, 1984, 1996, 2000, 2012, 2024, 2036, 2048, 2060, 2072, 2084, 2096, 2108, 2120, 2132, 2144, 2156, 2168, 2180, 2192, 2204, 2216, 2228, 2240, 2252, 2264, 2276, 2288, 2300, 2312, 2324, 2336, 2348, 2360, 2372, 2384, 2396, 2408, 2420, 2432, 2444, 2456, 2468, 2480, 2492, 2504, 2516, 2528, 2540, 2552, 2564, 2576, 2588, 2600, 2612, 2624, 2636, 2648, 2660, 2672, 2684, 2696, 2708, 2720, 2732, 2744, 2756, 2768, 2780, 2792, 2804, 2816, 2828, 2840, 2852, 2864, 2876, 2888, 2900, 2912, 2924, 2936, 2948, 2960, 2972, 2984, 2996, 3000, 3012, 3024, 3036, 3048, 3060, 3072, 3084, 3096, 3108, 3120, 3132, 3144, 3156, 3168, 3180, 3192, 3204, 3216, 3228, 3240, 3252, 3264, 3276, 3288, 3300, 3312, 3324, 3336, 3348, 3360, 3372, 3384, 3396, 3408, 3420, 3432, 3444, 3456, 3468, 3480, 3492, 3504, 3516, 3528, 3540, 3552, 3564, 3576, 3588, 3600, 3612, 3624, 3636, 3648, 3660, 3672, 3684, 3696, 3708, 3720, 3732, 3744, 3756, 3768, 3780, 3792, 3804, 3816, 3828, 3840, 3852, 3864, 3876, 3888, 3900, 3912, 3924, 3936, 3948, 3960, 3972, 3984, 3996, 4000, 4012, 4024, 4036, 4048, 4060, 4072, 4084, 4096, 4108, 4120, 4132, 4144, 4156, 4168, 4180, 4192, 4204, 4216, 4228, 4240, 4252, 4264, 4276, 4288, 4300, 4312, 4324, 4336, 4348, 4360, 4372, 4384, 4396, 4408, 4420, 4432, 4444, 4456, 4468, 4480, 4492, 4504, 4516, 4528, 4540, 4552, 4564, 4576, 4588, 4600, 4612, 4624, 4636, 4648, 4660, 4672, 4684, 4696, 4708, 4720, 4732, 4744, 4756, 4768, 4780, 4792, 4804, 4816, 4828, 4840, 4852, 4864, 4876, 4888, 4900, 4912, 4924, 4936, 4948, 4960, 4972, 4984, 4996, 5000, 5012, 5024, 5036, 5048, 5060, 5072, 5084, 5096, 5108, 5120, 5132, 5144, 5156, 5168, 5180, 5192, 5204, 5216, 5228, 5240, 5252, 5264, 5276, 5288, 5300, 5312, 5324, 5336, 5348, 5360, 5372, 5384, 5396, 5408, 5420, 5432, 5444, 5456, 5468, 5480, 5492, 5504, 5516, 5528, 5540, 5552, 5564, 5576, 5588, 5600, 5612, 5624, 5636, 5648, 5660, 5672, 5684, 5696, 5708, 5720, 5732, 5744, 5756, 5768, 5780, 5792, 5804, 5816, 5828, 5840, 5852, 5864, 5876, 5888, 5900, 5912, 5924, 5936, 5948, 5960, 5972, 5984, 5996, 6000, 6012, 6024, 6036, 6048, 6060, 6072, 6084, 6096, 6108, 6120, 6132, 6144, 6156, 6168, 6180, 6192, 6204, 6216, 6228, 6240, 6252, 6264, 6276, 6288, 6300, 6312, 6324, 6336, 6348, 6360, 6372, 6384, 6396, 6408, 6420, 6432, 6444, 6456, 6468, 6480, 6492, 6504, 6516, 6528, 6540, 6552, 6564, 6576, 6588, 6600, 6612, 6624, 6636, 6648, 6660, 6672, 6684, 6696, 6708, 6720, 6732, 6744, 6756, 6768, 6780, 6792, 6804, 6816, 6828, 6840, 6852, 6864, 6876, 6888, 6900, 6912, 6924, 6936, 6948, 6960, 6972, 6984, 6996, 7000, 7012, 7024, 7036, 7048, 7060, 7072, 7084, 7096, 7108, 7120, 7132, 7144, 7156, 7168, 7180, 7192, 7204, 7216, 7228, 7240, 7252, 7264, 7276, 7288, 7300, 7312, 7324, 7336, 7348, 7360, 7372, 7384, 7396, 7408, 7420, 7432, 7444, 7456, 7468, 7480, 7492, 7504, 7516, 7528, 7540, 7552, 7564, 7576, 7588, 7600, 7612, 7624, 7636, 7648, 7660, 7672, 7684, 7696, 7708, 7720, 7732, 7744, 7756, 7768, 7780, 7792, 7804, 7816, 7828, 7840, 7852, 7864, 7876, 7888, 7900, 7912, 7924, 7936, 7948, 7960, 7972, 7984, 7996, 8000, 8012, 8024, 8036, 8048, 8060, 8072, 8084, 8096, 8108, 8120, 8132, 8144, 8156, 8168, 8180, 8192, 8204, 8216, 8228, 8240, 8252, 8264, 8276, 8288, 8300, 8312, 8324, 8336, 8348, 8360, 8372, 8384, 8396, 8408, 8420, 8432, 8444, 8456, 8468, 8480, 8492, 8504, 8516, 8528, 8540, 8552, 8564, 8576, 8588, 8600, 8612, 8624, 8636, 8648, 8660, 8672, 8684, 8696, 8708, 8720, 8732, 8744, 8756, 8768, 8780, 8792, 8804, 8816, 8828, 8840, 8852, 8864, 8876, 8888, 8900, 8912, 8924, 8936, 8948, 8960, 8972, 8984, 8996, 9000, 9012, 9024, 9036, 9048, 9060, 9072, 9084, 9096, 9108, 9120, 9132, 9144, 9156, 9168, 9180, 9192, 9204, 9216, 9228, 9240, 9252, 9264, 9276, 9288, 9300, 9312, 9324, 9336, 9348, 9360, 9372, 9384, 9396, 9408, 9420, 9432, 9444, 9456, 9468, 9480, 9492, 9504, 9516, 9528, 9540, 9552, 9564, 9576, 9588, 9600, 9612, 9624, 9636, 9648, 9660, 9672, 9684, 9696, 9708, 9720, 9732, 9744, 9756, 9768, 9780, 9792, 9804, 9816, 9828, 9840, 9852, 9864, 9876, 9888, 9900, 9912, 9924, 9936, 9948, 9960, 9972, 9984, 9996, 10000, 10012, 10024, 10036, 10048, 10060, 10072, 10084, 10096, 10108, 10120, 10132, 10144, 10156, 10168, 10180, 10192, 10204, 10216, 10228, 10240, 10252, 10264, 10276, 10288, 10300, 10312, 10324, 10336, 10348, 10360, 10372, 10384, 10396, 10408, 10420, 10432, 10444, 10456, 10468, 10480, 10492, 10504, 10516, 10528, 10540, 10552, 10564, 10576, 10588, 10600, 10612, 10624, 10636, 10648, 10660, 10672, 10684, 10696, 10708, 10720, 10732, 10744, 10756, 10768, 10780, 10792, 10804, 10816, 10828, 10840, 10852, 10864, 10876, 10888, 10900, 10912, 10924, 10936, 10948, 10960, 10972, 10984, 10996, 11000, 11012, 11024, 11036, 11048, 11060, 11072, 11084, 11096, 11108, 11120, 11132, 11144, 11156, 11168, 11180, 11192, 11204, 11216, 11228, 11240, 11252, 11264, 11276, 11288, 11300, 11312, 11324, 11336, 11348, 11360, 11372, 11384, 11396, 11408, 11420, 11432, 11444, 11456, 11468, 11480, 11492, 11504, 11516, 11528, 11540, 11552, 11564, 11576, 11588, 11600, 11612, 11624, 11636, 11648, 11660, 11672, 11684, 11696, 11708, 11720, 11732, 11744, 11756, 11768, 11780, 11792, 11804, 11816, 11828, 11840, 11852, 11864, 11876, 11888, 11900, 11912, 11924, 11936, 11948, 11960, 11972, 11984, 11996, 12000, 12012, 12024, 12036, 12048, 12060, 12072, 12084, 12096, 12108, 12120, 12132, 12144, 12156, 12168, 12180, 12192, 12204, 12216, 12228, 12240, 12252, 12264, 12276, 12288, 12300, 12312, 12324, 12336, 12348, 12360, 12372, 12384, 12396, 12408, 12420, 12432, 12444, 12456, 12468, 12480, 12492, 12504, 12516, 12528, 12540, 12552, 12564, 12576, 12588, 12600, 12612, 12624, 12636, 12648, 12660, 12672, 12684, 12696, 12708, 12720, 12732, 12744, 12756, 12768, 12780, 12792, 12804, 12816, 12828, 12840, 12852, 12864, 12876, 12888, 12900, 12912, 12924, 12936, 12948, 12960, 12972, 12984, 12996, 13000, 13012, 13024, 13036, 13048, 13060, 13072, 13084, 13096, 13108, 13120, 13132, 13144, 13156, 13168, 13180, 13192, 13204, 13216, 13228, 13240, 13252, 13264, 13276, 13288, 13300, 13312, 13324, 13336, 13348, 13360, 13372, 13384, 13396, 13408, 13420, 13432, 13444, 13456, 13468, 13480, 13492, 13504, 13516, 13528, 13540, 13552, 13564, 13576, 13588, 13600, 13612, 13624, 13636, 13648, 13660, 13672, 13684, 13696, 13708, 13720, 13732, 13744, 13756, 13768, 13780, 13792, 13804, 13816, 13828, 13840, 13852, 13864, 13876, 13888, 13900, 13912, 13924, 13936, 13948, 13960, 13972, 13984, 13996, 14000, 14012, 14024, 14036, 14048, 14060, 14072, 14084, 14096, 14108, 14120, 14132, 14144, 14156, 14168, 14180, 14192, 14204, 14216, 14228, 14240, 14252, 14264, 14276, 14288, 14300, 14312, 14324, 14336, 14348, 14360, 14372, 14384, 14396, 14408, 14420, 14432, 14444, 14456, 14468, 14480, 14492, 14504, 14516, 14528, 14540, 14552, 14564, 14576, 14588, 14600, 14612, 14624, 14636, 14648, 14660, 14672, 14684, 14696, 14708, 14720, 14732, 14744, 14756, 14768, 14780, 14792, 14804, 14816, 14828, 14840, 14852, 14864, 14876, 14888, 14900, 14912, 14924, 14936, 14948, 14960, 14972, 14984, 14996, 15000, 15012, 15024, 15036, 15048, 15060, 15072, 15084, 15096, 15108, 15120, 15132, 15144, 15156, 15168, 15180, 15192, 15204, 15216, 15228, 15240, 15252, 15264, 15276, 15288, 15300, 15312, 15324, 15336, 15348, 15360, 15372, 15384, 15396, 15408, 15420, 15432, 15444, 15456, 15468, 15480, 15492, 15504, 15516, 15528, 15540, 15552, 15564, 15576, 15588, 15600, 15612, 15624, 15636, 15648, 15660, 15672, 15684, 15696, 15708, 15720, 15732, 15744, 15756, 15768, 15780, 15792, 15804, 15816, 15828, 15840, 15852, 15864, 15876, 15888, 15900, 15912, 15924, 15936, 15948, 15960, 15972, 15984, 15996, 16000, 16012, 16024, 16036, 16048, 16060, 16072, 16084, 16096, 16108, 16120, 16132, 16144, 16156, 16168, 16180, 16192, 16204, 16216, 16228, 16240, 16252, 16264, 16276, 16288, 16300, 16312, 16324, 16336, 16348, 16360, 16372, 16384, 16396, 16408, 16420, 16432, 16444, 16456, 16468, 16480, 16492, 16504, 16516, 16528, 16540, 16552, 16564, 16576, 16588, 16600, 16612, 16624, 16636, 16648, 16660, 16672, 16684, 16696, 16708, 16720, 16732, 16744, 16756, 16768, 16780, 16792, 16804, 16816, 16828, 16840, 16852, 16864, 16876, 16888, 16900, 16912, 16924, 16936, 16948, 16960, 16972, 16984, 16996, 17000, 17012, 17024, 17036, 17048, 17060, 17072, 17084, 17096, 17108, 17120, 17132, 17144, 17156, 17168, 17180, 17192, 17204, 17216, 17228, 17240, 17252, 17264, 17276, 17288, 17300, 17312, 17324, 17336, 17348, 17360, 17372, 17384, 17396, 17408, 17420, 17432, 17444, 17456, 17468, 17480, 17492, 17504, 17516, 17528, 17540, 17552, 17564, 17576, 17588, 17600, 17612, 17624, 17636, 17648, 17660, 17672, 17684, 17696, 17708, 17720, 17732, 17744, 17756, 17768, 17780, 17792, 17804, 17816, 17828, 17840, 17852, 17864, 17876, 17888, 17900, 17912, 17924, 17936, 17948, 17960, 17972, 17984, 17996, 18000, 18012, 18024, 18036, 18048, 18060, 18072, 18084, 18096, 18108, 18120, 18132, 18144, 18156, 18168, 18180, 18192, 18204, 18216, 18228, 18240, 18252, 18264, 18276, 18288, 18300, 18312, 18324, 18336, 18348, 18360, 18372, 18384, 18396, 18408, 18420, 18432, 18444, 18456, 18468, 18480, 18492, 18504, 18516, 18528, 18540, 18552, 18564, 18576, 18588, 18600, 18612, 18624, 18636, 18648, 18660, 18672, 18684, 18696, 18708, 18720, 18732, 18744, 18756, 18768, 18780, 18792, 18804, 18816, 18828, 18840, 18852, 18864, 18876, 18888, 18900, 18912, 18924, 18936, 18948, 18960, 18972, 18984, 18996, 19000, 19012, 19024, 19036, 19048, 19060, 19072, 19084, 19096, 19108, 19120, 19132, 19144, 19156, 19168, 19180, 19192, 19204, 19216, 19228, 19240, 19252, 19264, 19276, 19288, 19300, 19312, 19324, 19336, 19348, 19360, 19372, 19384, 19396, 19408, 19420, 19432, 19444, 19456, 19468, 19480, 19492, 19504, 19516, 19528, 19540, 19552, 19564, 19576, 19588, 19600, 19612, 19624, 19636, 19648, 19660, 19672, 19684, 19696, 19708, 19720, 19732, 19744, 19756, 19768, 19780, 19792, 19804, 19816, 19828, 19840, 19852, 19864, 19876, 19888, 19900, 19912, 19924, 19936, 19948, 19960, 19972, 19984, 19996, 20000, 20012, 20024, 20036, 20048, 20060, 20072, 20084, 20096, 20108, 20120, 20132, 20144, 20156, 20168, 20180, 20192, 20204, 20216, 20228, 20240, 20252, 20264, 20276, 20288, 20300, 20312, 20324, 20336, 20348, 20360, 20372, 20384, 20396, 20408, 20420, 20432, 20444, 20456, 20468, 20480, 20492, 20504, 20516, 20528, 20540, 20552, 20564, 20576, 20588, 20600, 20612, 20624, 20636, 20648, 20660, 20672, 20684, 20696, 20708, 20720, 20732, 20744, 20756, 20768, 20780, 20792, 20804, 20816, 20828, 20840, 20852, 20864, 20876, 20888, 20900, 20912, 20924, 20936, 20948, 20960, 20972, 20984, 20996, 21000, 21012, 21024, 21036, 21048, 21060, 2



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## INDEX TO WHERE TO BUY

Bacon-Pietsch Co., Inc.	254
Basic Incorporated	254
Bonded Scale & Machine Co.	253
Brill Equipment Co.	254
Carbola Chemical Co., Inc.	258
Carlyle Rubber Co., Inc.	255
Corson, G. & W. H., Inc.	254
Eighmy Equipment Co.	254
Evans & Associates	257
Fish, Charles V., Co., Inc.	256
Fligeltaub, Henry, Co.	256
Foster, L. B., Co.	255
Frank, M. K.	256
Gruendler Crusher & Pulverizer Co.	254
Heat & Power Co., Inc.	252
Heidenreich, E. Lee, Jr.	257
Heineken, W. P., Inc.	256
Hercules Cement Corp.	257
Hewitt-Robins, Inc.	257
Hudson Coal Co.	254
Humphres, Olen	258
McLeod, Alex T.	254
Mid-Continent Equipment Co., Inc.	254
New Jersey Drilling Co., Inc.	257
New York Trap Rock Corp.	258
Nussbaum Electric Co.	256
O'Neill, A. J.	255
Pennsylvania Drilling Co.	257
Perry Equipment Corp.	255
Pittsburgh Plate Glass Co.	252
Smith, H. Y., Co.	256
Smith, L. B., Inc.	255
Smith Engineering Works	257
Stein Equipment Co.	256
Steiner-Rausch Granite Corp.	258
Swabb, Frank, Equipment Co., Inc.	256
Thomasville Drilling & Testing Co.	257
Tractor & Equipment Co.	254
Troyer, Stanley B., Equipment Co.	256
Unverzagt, G. A., & Sons Inc.	254
Walsh, Richard P., Co.	256
Wenzel Machinery Co.	252
Whisler Equipment Co.	256

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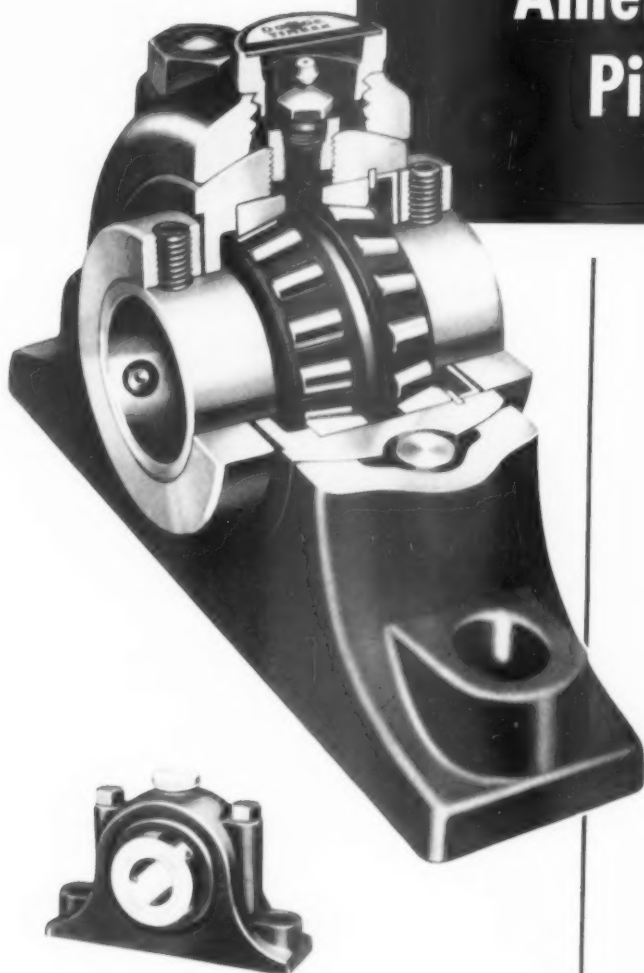
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# INDEX TO DISPLAY ADVERTISERS

Acme-Hamilton Mfg. Corp. .... 69  
 Allis-Chalmers Mfg. Co.  
   Buda Div. .... 223  
 Allis-Chalmers Mfg. Co.  
   Industrial Products 16, 17, 25, 187, 242  
 Allis-Chalmers Mfg. Co.  
   Tractor Div. .... 139, 229, 262  
 American Air Filter Co., Inc. .... 81  
 American Brake Shoe Co.  
   American Manganese Steel Div. 235  
 American Cyanamid Co. .... 79  
 American Pulverizer Co. .... 54  
 Athey Products Corp. .... 180  
 Atlas Powder Co. .... 45  
 Autocar Div. .... 52, 53

Babcock & Wilcox Co. .... 209, 233  
 Bailey Meter Co. .... 238  
 Baldwin-Lima-Hamilton Corp.  
   Lima Works Div. .... 251  
 Baltimore & Ohio Railroad .... 164  
 Barber-Greene Co. .... 175  
 Bath Iron Works Corp. .... 163  
 Bay City Shovels, Inc. .... 261  
 Bemis Bro. Bag Co. .... 86  
 Bin-Dicator Co. .... 200  
 Blaw-Knox Co. .... 220  
 Bradley Pulverizer Co. .... 194  
 Bucyrus-Erie Co. .... 150  
 Buell Engineering Co. .... 26, 27

Cambridge Instrument Co., Inc. .... 200  
 Canadian Refractories Ltd. .... 29  
 Cape Ann Anchor & Forge Co. .... 224  
 Caterpillar Tractor  
   Co. .... 50, 55, 171, 179  
 Chain Belt Co. .... 221  
 Chicago Pneumatic Tool Co. .... 36  
 Clark Equipment Co. .... 74, 75, 87  
 Coates Steel Products Co. .... 169  
 Colorado Fuel & Iron  
   Corp. .... 14, 142, 244  
 Colorado Iron Works Co. .... 80  
 Columbia-Geneva Steel Div. .... 82, 83  
 Combustion Engineering, Inc. .... 30, 31

Daybrook Hydraulic Div. .... 239  
 Deister Concentrator Co., Inc. .... 212  
 Deister Machine Co. .... 100  
 Denver Equipment  
   Co. .... Inside Front Cover  
 Dewey and Almy Chemical Co. 76, 77  
 Diamond Iron Works Div. .... 237  
 Dodge Mfg. Corp. .... 259  
 Dorr-Oliver, Inc. .... 213  
 DuPont, E. I., de Nemours  
   & Co., Inc. .... 191  
 Dustex Corp. .... 226

Eagle Iron Works .... 227  
 Easton Car & Construction Co. .... 3  
 Eaton Mfg. Co. .... 91  
 Electric Steel Foundry Co. .... 153  
 Ensign-Bickford Co. .... 160  
 Euclid Div. .... 99

Fairbanks, Morse & Co. .... 214  
 Falk Corp. .... 141, 249  
 Firestone Tire & Rubber Co. .... 185  
 Fiske Brothers Refining Co.  
   LUBRIPLATE DIVISION .... 240  
 Ford Motor Co. .... 58, 59  
 Frederick Iron & Steel, Inc. .... 198  
 Fuller Co. .... 56, 57

Garrison Mfg. Co., Inc. .... 184  
 General American Transportation  
   Corp. .... 56, 57

General Motors Corp. .... 99  
 General Refractories Co. .... 51  
 Gilman Paper Co. .... 182  
 Goodman Mfg. Co. .... 237  
 Goodrich, B. F., Co. .... 1, 159  
 Grace, W. R., & Co. .... 76, 77  
 Green, A. P., Fire Brick Co. .... 188

Hamilton Rubber Mfg. Corp. .... 69  
 Hammermills, Inc. .... 149  
 Harbison-Walker Refractories  
   Co. .... 29, 157  
 Hardinge Co., Inc. .... 217  
 Harnischfeger Corp. .... 12, 13, 18  
 Hayward Co. .... 198  
 Henry Mfg. Co., Inc. .... 196  
 Hercules Powder Co., Inc. .... 173  
 Hewitt-Robins .... 94  
 Hough, Frank G., Co. .... 88, 89  
 Howe Scale Co. .... 72  
 Hyster Co. .... 215

Illinois Gear & Machine  
   Co. .... Inside Back Cover  
 Ingersoll-Rand Co. .... 64  
 International Harvester Co. .... 88, 89  
 Iowa Mfg. Co. .... 177

Jaeger Machine Co. .... 225  
 Jeffrey Mfg. Co. .... 230  
 Jones & Laughlin Steel Corp. .... 147  
 Joy Mfg. Co. .... 192

Kaiser Aluminum & Chemical Sales,  
   Inc. .... Back Cover  
 Kansas City Hay Press Co. .... 252  
 Kennedy-Van Saun Mfg. & Eng.  
   Corp. .... 126, 127  
 Kensington Steel .... 241  
 Kiesler, Joseph F., Co. .... 78  
 Koehring Co. .... 20, 21  
 Kraft Bag Corp. .... 182

Large, H. B., Engineering Co. .... 228  
 Leeds & Northrup Co. .... 211  
 LeTourneau-Westinghouse  
   Co. .... 38, 39, 40, 41, 42, 43, 137  
 Lima Works Division  
   Baldwin-Lima-Hamilton Corp. 251  
 Link-Belt Co. .... 167, 236  
 Link-Belt Speeder Corp. .... 70, 71  
 Lippmann Engineering Works 46, 47  
 LUBRIPLATE DIVISION  
   Fiske Brothers Refining Co. .... 240

Mack Trucks, Inc. .... 128  
 Manitowoc Engineering Corp. .... 195  
 Manitowoc Shipbuilding, Inc. .... 216  
 Marsh, E. F., Engineering Co. .... 208  
 McLanahan & Stone Corp. .... 48, 49  
 McNally Pittsburg Mfg. Corp. .... 220  
 Merrick Scale Mfg. Co. .... 248  
 Mexico Refractories Co. .... 93  
 Mine & Smelter Supply Co. .... 80, 197  
 Morris Machine Works .... 44  
 Murphy Diesel Co. .... 165

Nordberg Mfg. Co. .... 34, 35  
 Norfolk & Western Railway .... 199  
 Northern Blower Co. .... 210  
 Northwest Engineering Co. .... 5

Owen Bucket Co. .... 68

Pennsylvania Crusher Div. .... 163  
 Pettibone Mulliken Corp. .... 149  
 Pioneer Engineering .... 201  
 Plibrico Co. .... 186  
 Poor & Co., Inc. .... 201, 241

Quaker Rubber Corporation, Division  
   of H. K. Porter Co., Inc. of  
   Pittsburgh .... 247

Ramsel Fastening System  
   Winchester-Western Div.,  
   Olin Mathieson Chemical  
   Corp. .... 66, 67  
 Raymond Division .... 30, 31  
 Rockwell Spring & Axle Co. .... 62, 63  
 Roebbing's, John A., Sons Corp. .... 244  
 Ryerson, Joseph T., & Son, Inc. .... 228

Safety Industries, Inc. .... 72  
 Sauerman Bros., Inc. .... 6  
 Schield Bantam Co. .... 65  
 Schramm, Inc. .... 206  
 Screen Equipment Co., Inc. .... 73  
 Simplicity Engineering Co. .... 84, 85  
 Sly, W. W., Mfg. Co. .... 90  
 Smith, F. L., & Co. .... 8, 11, 22, 132  
 Smith Engineering Works .... 95  
 Southwestern Engineering Co. .... 189  
 Sprague & Henwood, Inc. .... 92  
 Spraying Systems Co. .... 220  
 Standard Metal Mfg. Co. .... 190  
 Stearns-Roger Mfg. Co. .... 203  
 Stedman Foundry & Machine Co.,  
   Inc. .... 212  
 Stood Company .... 125  
 Straub Mfg. Co., Inc. .... 205  
 Stulz-Sickles Co. .... 226  
 Sturtevant Mill Co. .... 97  
 Syntrol Co. .... 246

Tennessee Coal & Iron Div. .... 82, 83  
 Texas Company .... 60  
 Thermoid Co. .... 243  
 Timken Detroit Axle Div. .... 62, 63  
 Timken Roller Bearing Co. .... 4  
 Traylor Engineering & Mfg. Co. .... 7  
 Twin City Iron & Wire Co. .... 198  
 Tyler, W. S., Co. .... 219

United Engineering & Foundry  
   Co. .... 212  
 United States Steel Corp. .... 82, 83  
 Universal Engineering Corp. .... 149  
 Universal Road Machinery Co. .... 224  
 Universal Vibrating Screen Co. .... 228

Vulcan Iron Works .... 250

Walsh Refractories Corp. .... 207  
 Western Machinery Co. .... 231  
 Western Precipitation Corp. .... 218  
 Westinghouse Air Brake  
   Co. .... 38, 39, 40, 41, 42, 43, 137  
 White Motor Co. .... 52, 53  
 Wickwire Spencer Steel Div. .... 14, 142  
 Willey, A. R., & Sons, Inc. .... 33  
 Williams Patent Crusher &  
   Pulverizer Co. .... 193  
 Wood, Charles E., Co. .... 252

Young, L. A., Spring & Wire  
   Corp. .... 239



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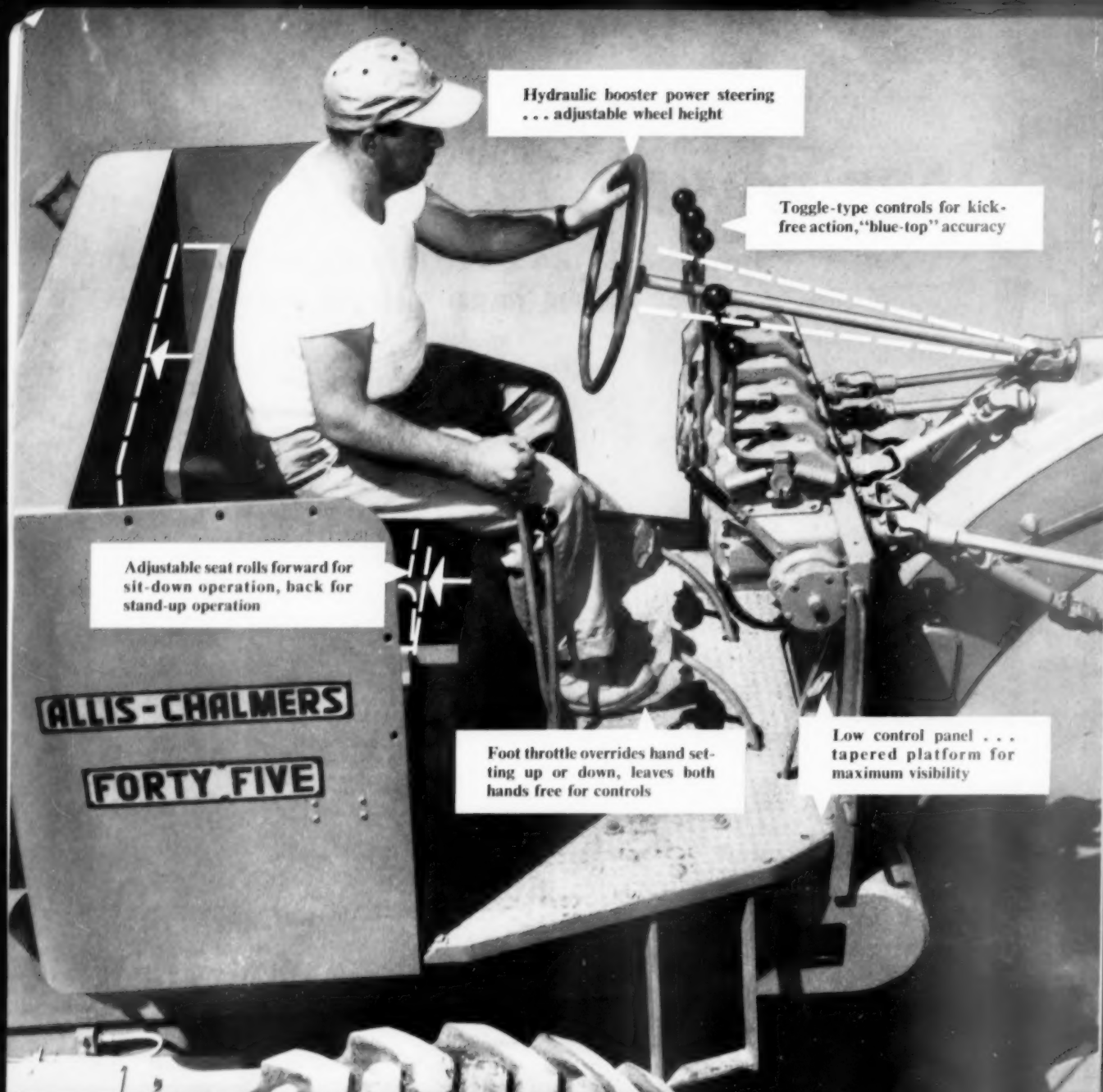
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261



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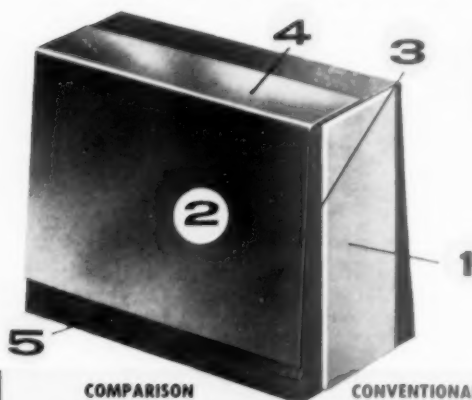


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Steel plates between bricks for bonding	Install by hand	Attached to brick at factory	Bonding shim to liner assures automatic placement of shim
Provision for circumferential expansion	Install cardboard spacers by hand	Expansion provided by thickness of adhesive that bonds shim to brick	Thickness of combustible adhesive provides correct allowance for circumferential expansion (within ring)
Hot face indicator	No hot face indicator	Clearly identified by touch or sight	Plate overlapping hot face makes visual inspection quick—easy to see that each brick is correctly installed
Effect on reducing shell temperature	None	Design provides heat buffer to reduce shell temperature	Half-inch gap between end of shim and shell acts as heat buffer to reduce shell temperature for greater kiln efficiency

\*The product name "Unitab" is a trademark of Kaiser Aluminum & Chemical Corporation, and succeeds the former name "Unitized Kiln Liner T3." Patents for Unitab Liners have been applied for in the U.S.A. and foreign countries

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